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DIESEL RAILWAY TRACTION

The March issue of this RAILWAY GAZETTE publication, illustrating and describing developments in Diesel Railway Traction, is now ready, price 2s.

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Last British Railway Meetings

THE final annual meetings of the four main-line railway companies will have been held by the time this issue of *The Railway Gazette* reaches its home subscribers—the final Southern meeting was to be held on Thursday; the Great Western and London Midland & Scottish meetings on Friday morning; and the London & North Eastern on Friday afternoon. The notices convening these meetings stated that they are held for those who were on the register of holders of securities of the company in question immediately before January 1, 1948, in order to receive the statement of the amount payable by the British Transport Commission to the company under Section 20 of the Transport Act, 1947. Full reports of these meetings will appear in next week's issue. In the case of the Southern, London Midland & Scottish, and London & North Eastern it will be their 25th and final meeting, grouping having lasted exactly a quarter of a century. The Great Western meeting will be an even more poignant event; that company was the only one to survive the 1923 grouping and celebrated its centenary just thirteen years ago in 1935. Now it has gone West, too. Having regard to the fact that railway meetings before 1911 were held half yearly, the Great Western will be approaching its 200th.

Argentine Railway Repayments

Last week-end it became known that the £150,000,000 due from the Argentine Government for the purchase of the British-owned railways would be paid to the companies through the Bank of England on Monday, March 1. Announcements were made by the companies that final payments of debenture interest to September 30 last would be made on dates varying between March 19 and April 2, and that the principal of debenture stocks as laid down under the schemes of arrangement would be repaid on dates between May 11 and May 19. The table below summarises the position as made known by the companies:—

	Deb. Interest payment	Debenture Repayment
Arg. Grt. Western	March 19	May 19
Arg. N. E.	March 23	May 6
B.A.G.S.	April 1	May 11
B.A. Midland	April 1	May 11
B.A.P.	March 19	May 19
B.A. Western	April 1	May 11
Bahia Blanca	April 1	May 11
Cent. Arg.	April 2*	May 7*
Entre Rios	March 23	May 6
Villa Maria	March 19	May 19

* Interest coupons and bearer notes

The amount to be disbursed to the debenture holders is about three-fifths of the total. Although the dates of the repayments are rather later than had been expected, it is believed that this is largely because of the magnitude of the clerical work involved.

Preference and Ordinary Stocks

Steps are to be taken shortly to convene meetings of stockholders to approve resolutions placing the companies in liquidation. This is an essential preliminary to the repayment of capital to these stockholders. In this case it is not expected that the first distributions will be possible before July or August in view of the work involved. The intention, it is expected, will be for the liquidators to make the largest possible first payment, and before this can be done a great deal of detailed investigation will be necessary to assess the sums which can reasonably be freed and the machinery of repayment arranged. Although, therefore, the long drawn-out arrangements for the sale of the Argentine railways have now reached their final stages, the stockholders still have some months to wait before they receive the first of their capital repayments. It may well be the end of this year, or even later, before the final distributions are made.

Crown Agents' Engineering Department Reorganisation

As a result of progressive expansion in the activities of the engineering branches of the Crown Agents for the Colonies, a reorganisation has been effected as from February 16 involving a certain separation of work formerly conducted by single departments. Under the previous arrangement, civil engineer-

ing, locomotive, and rolling stock matters were the province of the Designs Department. The new scheme provides separate Civil Engineering and Mechanical Engineering departments, between which certain technical staff of the previous Contracts Department have been distributed. Mr. W. L. Watson, hitherto Chief Engineer (Contracts), has assumed the post of Engineer-in-Chief as an interim measure until his retirement twelve months hence, when he will be succeeded by Mr. R. W. Foxlee, at present Chief Civil Engineer in the new Civil Engineering Department. The new Mechanical Engineering Department is in charge of Mr. A. Campbell. The Engineering Inspection Department functions as before. A list of the various appointments involved in the reorganisation is given in our Personal pages this week. At the present time, when all Colonial railways are affected by shortage of supplies, the work of the Crown Agents in effecting standardisation of parts and hence promoting interchangeability is of increasing importance, while its civil engineering activities in connection with the East African groundnuts scheme are of growing interest to transport.

* * *

Gauge Standardisation in Africa

It is a coincidence that in the week the foregoing reorganisation of the Crown Agents' engineering departments was announced, we received a letter, published in the correspondence columns of this issue, advocating the adoption of the 4-ft. 8½-in. gauge throughout Africa. Standardisation of gauge on Colonial railways in Africa is a matter to which the Crown Agents' engineering departments have paid close attention since 1931, but with a view to the adoption of the 3-ft. 6-in. gauge. Since 1936, for example, designs for locomotives and rolling stock on metre-gauge lines in East Africa have been arranged to provide for rapid and simple conversion to 3-ft. 6-in. gauge, and similar attention has been paid to convertibility of couplers and brake components. The experience of the Crown Agents in evolving designs capable of conversion from metre to 3-ft. 6-in. gauge was of value during the war when the information was made available to firms building the MacArthur locomotives in the United States so that they could be turned out for whichever gauge was required by changing the wheels and axles and making a slight alteration to the brake rigging. In addition, two locomotives will soon be running in Kenya equipped with vacuum brakes to decide whether standardisation in this respect also will be satisfactory on the heavy gradients of that country, and the experiment is of particular interest in view of the forthcoming unification of East African transport.

* * *

Overseas Railway Traffic

The fortnight ended February 21 (the eve of the recent strike) brought decreases in Leopoldina traffic in both weeks, the combined fall being £20,656. The aggregate at the end of the fortnight was £48,325 behind the previous year. Dorado Railway traffic lost £18,775 in the 12 months of 1947, the decline in December being £6,400. The new year began with a decrease of £7,600 in January. Better results on the G.W. of Brazil in recent weeks had put the aggregate £1,300 ahead of 1947 by the week ended February 14, the close of the preceding week having shown a deficit of £2,100. Declines have continued on the Central Uruguay, totalling £9,579 in the period under review, although the second week of the fortnight showed a marked improvement by being within £64 of the 1946-47 figure. Some results are tabulated below:—

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffics	Inc. or dec.
Buenos Ayres & Pacific*	32	3,250	+550	84,791	+12,699
Buenos Ayres Great Southern*	34	4,592	+326	126,328	+5,245
Buenos Ayres Western*	34	1,763	+306	48,940	+5,118
Central Argentine*	34	4,196	+804	119,172	+10,058
Canadian Pacific	52	6,231,500	+391,750	6,231,500	+391,750

* Traffic returns in thousands of pesos

Barsi Light Railway receipts in January were £23,610, an increase of £3,420, and the aggregate for 44 weeks showed an improvement of £24,052.

* * *

Suburban Electrification in Warsaw

A paper was read to the Institution of Electrical Engineers on March 4 by Mr. J. Podoski, describing the electrification of suburban lines in Warsaw which was undertaken before the

war. The work was carried out by the Metropolitan-Vickers Electrical Co. Ltd., and the English Electric Co. Ltd., the contract, of a value of £2,000,000, being signed in August, 1933. A description of the electrification appeared in the *Electric Railway Traction Supplement to The Railway Gazette* dated January 8, 1937. Mr. Podoski recalled that the first section was opened for public service at the end of 1936, and the whole contract was finished by May, 1938. All the installations were seriously damaged on two occasions during the war, first when the Germans entered Poland, and then in the Warsaw rising of August-October, 1944. Only one 15-mile section has been restored to traffic up to the present time. An important feature of the scheme was the linking by electrified services of the East and West main-line stations in Warsaw. The sections converted up to 1939 totalled 65 route-miles and the conversion was carried out at 3,000 V. d.c. A new line, partly in tunnel, was built between the East and West Stations, over which through trains were run between the eastern and western suburbs, calling at a new Central Station in Warsaw. In the three years of working up to the war, traffic on the routes concerned increased by nearly 100 per cent.

* * *

The Industrial Revolution in Art, 1760-1851

It is most appropriate that premises near the site of the field in which Richard Trevithick demonstrated his steam locomotive, in 1808, should have been chosen for an exhibition commemorating the achievements of science during the century that ended with the Great Exhibition of 1851. The present exhibition, which has been arranged by Dr. Francis D. Klingender, in collaboration with the Newcomen Society, is being held at Heal's Mansard Gallery, 196 Tottenham Court Road, London, W.1, from March 2 until April 13, and consists of prints, paintings, and models illustrating the Industrial Revolution in Britain, as seen by contemporary artists, after 1760, when Brindley's first canal was opened. The industrial prints of that period resembled the documentary films of today, and expressed vividly new currents in British life, and gave a new direction to British art. The subsequent squalor of industrial Britain was not the fault of the technicians, who were conscious that new techniques demanded new standards of design, but social change lagged behind. Today, when the gap is narrowing, a new interest attaches to the achievements of the pioneers.

* * *

New Wimbledon Signal Box, Southern Region

A new signal box at Wimbledon, Southern Region, was brought into use on Sunday morning, February 29, replacing the earlier "A" box. This box had been augmented by a separate building for electrical apparatus when colour-light signalling was installed through Wimbledon in 1936 and the heavy use to which it was subjected resulted in considerable wear on the lever frame and interlocking. In 1946 it was decided that the frame would have to be renewed, and since this could not be done as it stood, a new box has been built at the London end of the down local and main platform. The new box, which conforms in design to the latest standards, contains a 122-lever electro-mechanical frame operating all existing signals and points; a relay room and battery room; and linemen's mess and working accommodation. The points on the London Transport District Line which formerly were mechanically worked are now power-operated from the new box, the source of supply being a battery of accumulators charged by one of two rectifiers, which in emergency can operate the points direct. Signals on the main lines to Waterloo and Raynes Park are colour-lights, and on the other lines mechanical semaphores are retained. In the event of failure of the power points, handles are provided for manual operation. Train movements are shown by two illuminated diagrams, on which a train on track circuits is indicated by red lights.

* * *

The Derailment at Polesworth

Lt.-Colonel G. R. S. Wilson's report on the derailment near Polesworth, L.M.S.R., on July 21, 1947, appears summarised in this issue. It was fortunate that casualties were not considerably more numerous, considering the speed of the train and other circumstances. There was nothing whatever the matter with the engine and coaches, and the accident arose solely from the condition of the track on the curve, details

of which are given not only in the text but on the diagrams accompanying the report, which we reproduce. The track was recognised to be approaching the end of its life and the conclusion reached by Colonel Wilson, reduced to its essentials, is that the extent of the deterioration of the margin of safety had been misjudged. Variations in cant were not beyond permitted limits, but their wave form, combined with slackness of gauge, side cutting on the high rail, cumulative rolling of the locomotive, and yielding of fastenings, produced a critical condition at a point where, the gauge again holding, the leading bogie wheel was forced up across that rail, and general derailment had to follow. Engineers are working under great disadvantages arising from shortages of materials, not to speak of man-power difficulties. This is bound to have an undesirable effect in the work of maintaining our railway tracks and necessitates the greatest care in seeing that, until conditions improve, speed restrictions are imposed wherever necessary.

The Krauss Stayless Locomotive Boiler

In October, 1946, Mr. O. V. Bulleid, in his Presidential address to the Institution of Mechanical Engineers, announced that he had in hand a new design of locomotive boiler, in which firebox stays would be eliminated. A stayless boiler offers such advantages over the normal type that the idea has been considered frequently by locomotive engineers for many years past; some readers may recollect Mr. Hoy's design of a 0-8-0 locomotive with a corrugated firebox for the Lancashire & Yorkshire Railway in the early years of this century. A very complete account of recent German attempts in this direction has been published by the British Intelligence Objectives Sub-committee in their Final Report No. 430 (item No. 32), entitled "The German Locomotive Industry," which is reviewed elsewhere in this issue. This interesting design was manufactured by J. A. Krauss Maffei, of Allach, Munich, during the war, chiefly to reduce the number of man-hours required for construction—2,172, as against 3,445 for the normal type—at a time when Germany was desperately short of skilled labour. The firebox, of circular cross-section, has the comparatively great depth of 3 in. for the corrugations; the plate is 15 mm. (just over $\frac{1}{2}$ in.) thick, and the working pressure 235 lb. per sq. in. Tests in actual service have given highly satisfactory results, at least as good as the boiler for the "Kriegslokomotive" (austerity) 2-10-0. In both cases, the grate area is 42 sq. ft.; the steam output is 22,000 lb. per hr., when burning "brennstoff" coal of 10,800 B.Th.U. per lb. calorific value. The cost of the Krauss boiler is estimated to be two-thirds that of a boiler of normal type.

Steam Turbine-Electric Locomotives in U.S.A.

The Chesapeake & Ohio Railway has ordered three steam-driven turbine-electric locomotives of large size and noteworthy general arrangement; an illustrated account of the new machines, in the design of which the C. & O., Baldwins, and the Westinghouse Company have collaborated, appears elsewhere in this issue. These locomotives burn coal, and are therefore specially suited to the coal-producing country traversed by that railway. With a view to obtaining a better performance at starting and at low speeds, electric drive was chosen in preference to gear transmission. The line on which they will be used includes long stretches of heavy gradients, on which a locomotive with electric drive would be expected to make a better showing than one with geared drive, which is basically more suited to high-speed service on routes with few gradients. The turbine-electric locomotive is intrinsically heavier for a given output, but that is not a serious drawback in mountainous country if the additional weight is made available for adhesion, as in the Chesapeake & Ohio machines. Freight operation is also likely to be included in their duties. The chief components of the new locomotives, though not startlingly novel in themselves, are disposed in an entirely new way. At the leading end is the coal bunker, then comes the driver's cab; behind this is the boiler (firedoor end leading), which is followed by the propulsion unit. Lastly a separate tender, coupled behind the locomotive, carries the water supply. The operating characteristics of these large machines should make them particularly effective on long or heavy hauls where a high tractive effort must be exerted continuously.

The Prices and Wages Stop

LAST week the Government issued the miscellaneous goods (Maximum Prices) Order, 1948, which covers a very long list of articles, in respect of which a price stop is being imposed. Henceforward manufacturers of the scheduled goods will not be permitted to sell above the lowest price he charged in the two months ended June 31 last. No distributor may add a margin greater than he added in December last, or than is laid down in the schedule, whichever is the lower. This measure, coupled with the Government's policy to restrain wage increases, is the latest move against inflation.

Already the probable success of these two projects is being treated sceptically. A number of unions are going ahead with wage demands, which in most cases were formulated before the Government published its White Paper, and it is recognised that the prices stop is a great encouragement to the already large army of black marketeers. The whole edifice, which is being built up by the steps the Government has taken lately, is far too reminiscent of what has happened in Continental countries to be viewed without foreboding.

The Railway Gazette is not a political journal, but on occasion it has drawn attention to matters of economic interest. It may be recalled in our March 30, 1945, issue, we referred at some lengths to an outstanding book on economics entitled "The Road to Serfdom," by Professor F. A. Hayek. Professor Hayek is an Austrian, who saw at first hand the initiation of a totalitarian regime. He was, therefore, deeply concerned to see a repetition of the earlier phases, which had their result in the regimental economics of Nazi Germany, being reproduced in this country. At that time we pointed out the danger of adopting an attitude of "it cannot happen here," and it seems to us that the apprehension we expressed at that time has been more than justified in the events of the past two years.

In the "City Notes" of *The Times* on February 16, attention was drawn to the fact that a wage stop was the first substantial economic convention of the State in Germany, and that once the decision was taken to peg wage rates, controlled prices became necessary to safeguard consumers' standards or workers' morale. The decision to peg wages was taken in 1933 when unemployment existed on a large scale. By the end of 1936 the problem of wage and price stability presented itself under conditions not too different, economically, from those in this country at the present time.

The price stop decree of 1936 pegged prices to the level of an arbitrarily-chosen date (October 17, 1936), and prohibited all further price increases in response to rising demand. Rising costs had to be taken into account, but as a rule permission to increase prices was given only where higher costs resulted from higher prices of imports or from the use of more expensive substitutes.

Both devices, first the wage stop and later the price stop, it is recorded, turned out to have very little to commend them. Even with the compulsory powers of the State it was impossible to stop evasions of the general price stop. Nor were the methods of price adjustment under the "freeze" sufficiently flexible to avoid anomalies. Prices of industrial finished goods as a whole rose between October, 1936, and April, 1938, from 77.2 (1928 100) to 79.4, and those of consumer goods from 74.0 to 77.6; there was a marked fall in real wage rates and probably a decline in purchasing power of hourly wage earnings, which in money terms increased between 1933 and 1937 by 8 per cent.; no improvement occurred in output per man-hour. It proved easy to regulate prices in all organised markets or where the controlling authority held a strong position as a buyer, as in the capital goods sector. But where this was not the case the price regulations were difficult to enforce and were often ineffective; official pressure on profit margins was evaded by deterioration of quality. In the cartelised "basic" industries working on Government contracts the price freeze acted as a powerful stimulus to rationalisation and standardisation.

No one would wish to detract one iota from the strength of the Chancellor's appeal to the unions and employers to refrain voluntarily from making use of the strong bargaining power which they have gained because of full employment and the urgent need for production. But belief that the objective of eliminating inflation can be obtained through wage or profit squeezing is to mistake the symptoms for the disease.

Function or Department?—Mr. Train on Railway Executive's Work

UNDER the title "How the Railway Executive Will Function," we summarised in our issue of February 6 an address on "The Railways under Nationalisation," delivered by Mr. J. C. L. Train to the Permanent Way Institution. We pointed out that for the first time a member of the Railway Executive had explained how that body proposed to carry on its business, but we did not comment upon the opinions expressed in his paper. As some of the matters touched on are of fundamental importance, we feel that time will not be spent unprofitably in examining Mr. Train's ideas more thoroughly. Accordingly we have published the address in full in this issue, beginning on page 274.

Mr. Train began by stating that the organisation of the Railway Executive was unique because its members have a dual function: they are responsible as a body for decisions and recommendations, while each member has individual responsibility for the supervision of assigned branches of work. Has he forgotten the Board of the Admiralty? The First Lord of the Admiralty presides over a Board of ten members, including five Sea Lords who act respectively as Chief of Naval Staff, Chief of Naval Personnel, Controller, Chief of Supplies, and Deputy-Chief of Naval Staff (Air). Throughout two world wars, the Board took collective responsibility for keeping the fleet in being, but it was the Fourth Sea Lord who made certain that the ships were never short of anything from a needle to an anchor.

So in peacetime the Railway Executive will have to keep the railways running, and it will be General Sir William J. Slim's special duty to see that the fuel and stores required are forthcoming, just as it will be Mr. Train's province to look after permanent way, structures, signalling and telecommunications.

In describing his own place in the organisation, Mr. Train spoke of himself as "a functional officer," or again as "a functional member of the Executive." According to the authoritative dictionaries, the ugly word "functional" means "of or pertaining to a function or office; official; formal." The adjective also has technical significance in mathematics, physiology and medicine, but we cannot find any authority for applying it to an individual. What is wrong with the old-fashioned term "departmental" as indicating the officer concerned with a section of administrative work?

In outlining the duties entrusted to him in his individual capacity, Mr. Train laid stress on "standardisation, without stagnation." He proposes to choose the best of the practices followed by the old companies through the medium of the Civil and Signalling Engineers' Committees. That is in effect the old Railway Clearing House procedure which was instrumental in fixing many standards over a long period of years, but left matters of detail to the discretion of the companies.

In standardising it is often unwise to make a change for the mere sake of uniformity. The best practice is frequently the most expensive and so may be unsuitable for general use. In existing financial circumstances, the Railway Executive cannot afford to aim at theoretical perfection in platform walls or other structures; it should adopt the cheapest design that fits in with local requirements. In the past many promising schemes have been killed by high estimates by the engineer for the cost of carrying out the work; the regional engineers should be encouraged to exercise their ingenuity in giving the traffic staff additional facilities at a price on which they can earn a return.

From standard designs Mr. Train passed to standard procedure for renewal programmes, emphasising that lines would have to be classified on the same basis and materials specified in the same way, so that complete proposals could be submitted to the Executive on agreed dates. It is hoped to accomplish this through the Civil Engineers' Committee, but it may be a long time before the methods of the regions are modified in substance. These systems of working did not grow up in a day; they are well understood by the whole of the engineering staff and cannot be altered by a stroke of the pen.

The regions all have arrears of maintenance, but, by banning any immediate effort to overtake them, the Government has limited the Railway Executive's opportunities for adjusting renewal expenditure between one part of the country and another. In the meantime it might be advisable for its engineering member to examine the nature of the arrears and decide

the order of priority for taking essential renewals in hand when materials and men are available.

Somewhat surprisingly Mr. Train did not refer to the clamant need for economy as an offset to the persistent increase in working expenses. In 1938 the civil engineering and signalling departments spent over £21,370,000, or 15.5 per cent. of the total operating costs. That expenditure covered the laying of over 220,000 tons of rails and nearly 4½ million sleepers. Materials are no longer available in such profusion and the problem for the engineers will be to stretch the resources at their disposal to maintain the railways in a state efficient enough to carry present-day traffics, which are below 1938 in total tonnage, but comprise a higher proportion of valuable merchandise passing for long distances. Possibly a budgetary system will be introduced to limit the cost of "maintenance of way and works," for without a firm grip on expenditure the Railway Executive cannot hope to preserve the existing basis of charges and strike even in 1948.

It was disquieting to find Mr. Train enlarging upon the improvement in working conditions and the extension of social activities among the staff, without saying a word about meeting the bill of costs. So far as we can judge from the scanty statistics published as yet for 1947, the railways have entered on a period of declining traffics. Nevertheless, suggestions are being thrown out freely for spending money on projects which will not yield any return. Unless a peremptory halt is called to this unessential expenditure, there may be a rude awakening at the end of the year when a balance has to be struck between revenue and the expenses chargeable to it.

Southern Region Conferences

MR. JOHN ELLIOT, Chief Regional Officer of the Southern Region, has inaugurated a series of meetings with the staff separate and entirely distinct from the recognised negotiating machinery. These meetings, which are held at convenient railway centres, comprise on the one hand a cross-section of the staff representative of all departments and grades and, on the other, departmental headquarters and divisional officers.

The first meeting was held at the Brunswick House Institute in London on January 14. This was followed by meetings at Brighton on February 5, at Salisbury on February 12, and at Ashford on February 26. The last and final meeting of the series was held at Exeter on March 3. Usually about 200 members of the staff attend, including the chairmen and secretaries of local departmental committees and of line, shops and works committees, as well as members of the sectional councils. The purpose of the conferences is to enable the staff representatives to raise any matter concerning the operation and administration of the region, and, in opening the proceedings, Mr. Elliot makes it clear that no subject—other, of course, than purely personal grievances—is barred.

Mr. Elliot invites the utmost frankness from the staff in putting their questions and is equally frank in replying. He also calls on his officers to answer any question of a local or purely departmental character. As Chairman, he maintains complete impartiality as between the staff and his own officers, and if he feels from an exchange of views on either side that something is lacking, he does not hesitate to say so and instructs his officers to let him have the facts at once, or to bring matters to a more satisfactory conclusion by personal contact.

The staff has been enthusiastic in welcoming and taking the fullest advantage of the opportunities thus afforded for raising matters of various and widespread interest concerning railway operation generally and their own welfare in particular. Their questions have enabled the Chief Regional Officer to show them the other side of the picture and to explain just how and why what they may think should be possible is not capable of achievement. Alternatively, the members of the staff have been able to persuade Mr. Elliot that there is something from their point of view which can be adjusted, and in such a case he has never failed to respond. To give just one example—at the Salisbury meeting a shunter criticised the traffic control system and suggested it was unnecessary. He was given subsequently the opportunity of visiting the Traffic Control Office at Southampton and the sequel was the receipt of a letter in which the view was expressed that the Southern Division Control was "doing a fine job of work." "Control" and the tracing where

"lost time" occurs also figured in the discussion at the Ashford meeting.

The meetings have, in fact, been a complete and overwhelming success, and Mr. Elliot's proposal that the arrangements should be repeated next year always has been very enthusiastically and warmly welcomed by the staff. It is customary on these occasions for the officers and the staff to have their lunch together, and at the Ashford meeting on February 26 lunches for 200 people were provided in dining cars at the sidings at Ashford Station—an achievement as unique as it was remarkable for its success.

What were our reactions after attending the Ashford conference? We felt that the evident success of the Southern Region Conferences provided yet another justification of our recent criticisms of the new régime and the folly of striving for uniformity in "welding the British railways into one complete unit." We think the success of the Southern's conferences shows that the chief regional officers should be given the freest possible hand in running their railways—we beg pardon, "regions"—in their own way. Mr. Elliot, we understand, did not wait for any specific instructions before starting these conferences. Moreover, he evidently enjoys them, and so does his audience. He is an admirable chairman. But it does not follow, if similar conferences were started on all the other five regions, they would be equally successful. So much depends on the personal qualifications of each C.R.O. Thus the problem arises: Should similar conferences be made compulsory on all the regions or must the Southern conferences be sacrificed on the altar of standardisation?

Argentine Railway Staff

THE formerly British-owned railways in Argentina have been worked for account of the Government since July 1, 1946, but it was only on March 1, 1948, that the formal transfer to State ownership took place. The delay of twenty months between the decision to nationalise the lines and the actual take-over created uncertainty in the minds of superintendence staff of British nationality regarding their prospects in the event of acceptance of the invitation made to them by the Argentine Government to enter the service of the State.

Many senior officials, more particularly those who had completed the requisite number of years of service to qualify for pension, opted for retirement; indeed, the loss of staff has been sufficiently considerable to cause misgiving as to the future efficient management and operation of the lines. The problem of filling satisfactorily gaps in the staff of the organisation is among the most serious confronting the Argentine authorities.

Admittedly, of little less moment is the physical deterioration of tracks and rolling stock since 1939, when the outbreak of war cut off supplies of new equipment from British manufacturers; so great has become the accumulation of orders connected with reconstruction programmes in the devastated countries of Europe and Asia that, inevitably, there will be delays in sending to Argentina all she needs. Evidently, therefore, the responsibilities of maintenance staffs will be far more onerous than in normal circumstances, when over-age stretches of track and units of rolling stock are withdrawn from service at regular intervals and replaced with rails of greater weight per yard, more sleepers per mile of line, as well as locomotives, carriages, and wagons of greater carrying capacity and the more robust construction usually associated with modern standards. It is sufficiently clear, therefore, that the exodus of engineers, civil and mechanical, locomotive running and traffic staffs, with long experience of the varied conditions encountered in the widely differing zones of a vast country may well give rise to difficulties which could hardly have been foreseen at the time when the decision to nationalise the lines was taken.

It is more than passing interest to explore the possibilities of making good the loss of technical skill and administrative experience which now has to be faced. For many years before the lines were taken over, it was the practice of the British companies to encourage the youth of Argentina to take up railway careers. Furthermore, the largest system in the country, from the viewpoint of mileage, was the Argentine State Railway, which was administered and operated entirely by Argentines. Hence, it may well be that the junior technical and administrative posts can be filled without undue difficulty.

It is in the higher ranks of the service that the real problems may be expected to arise. Argentina is an agricultural country. Even after two world wars, which rendered imperative an intensive programme of industrialisation, there are still no major industries in Argentina of the heavy engineering types, capable of turning out railway track equipment and rolling stock of the design, construction, and finish demanded by modern railway practice. In Europe and the U.S.A., often it is the manufacturing industries which supply many of the oncoming generations of railway engineers who are fully abreast of the most modern technical developments; indeed, such training and experience are regarded as desirable qualifications among candidates for both maintenance and construction posts in railway service.

The disabilities under which locally recruited Argentine railwaymen labour in this respect have been made good hitherto, to some extent, by sending promising young engineering students to complete their training in the most modern locomotive, carriage, and wagon works in Great Britain, but the number so trained necessarily has been limited and is unlikely to prove adequate to meet the exceptional demands now to be expected through the departure of so large a proportion of Argentine railway technicians at short notice. Furthermore, it must not be overlooked that, in addition to the British-owned lines, there has been acquired recently the not inconsiderable mileage of metre-gauge lines formerly in French ownership, which also will fall to be staffed in due course, presumably by Argentines.

When the now State-owned railways were in British hands, not the least important of the duties devolving on the London boards was the constant recruitment of new staff, most of whom were obtained either from the home railways or from firms of contractors and manufacturers engaged in the production of rolling stock not only for South American railways, but also for other British-owned lines in Egypt, India, and the colonies. Thus, Argentina was assured of a steady intake of new staff, technically trained and experienced in the most modern schools, to replace the wastage caused by superannuation and other normal occurrences; it seems sufficiently clear that it will be necessary now to devise means of continuing such recruitments, at all events until the development of heavy iron and steel industries in Argentina enables the country to train her own railway staff in adequate numbers. It is not evident, however, that machinery for the recruitment of foreign personnel has been set up yet to fill the gap which will occur when the London boards have ceased to function, after the liquidation of the companies.

The solution of this particular problem is not rendered any the easier by the recent nationalisation of the railways in Great Britain and the prospective tendency to introduce service conditions akin to those obtaining in the civil service. In the days of private enterprise, ambitious young railwaymen were able to seek and accept contracts of service with British-owned companies overseas in expectation of an assured career, offering higher scales of pay and prospects of more rapid promotion, with superannuation benefits and other conditions of service which compared favourably with the terms under which they had served with the home railways. But the outlook will not be quite the same when service abroad entails entering into a contract with a foreign government, subject to laws and customs which are often but indifferently understood in this country and with the risk that at the end of three or five years the contract may not be renewed. To meet such contingencies, it may prove necessary to offer rather higher rates of pay and more attractive inducements.

The Argentine authorities at the highest level have intimated that they will welcome the co-operation of young engineers and operating staffs desirous of entering their railway service, but it is not yet known how preliminary contacts are to be established. When the lines were in British ownership, firms of consulting engineers, retained by the boards of directors, were the medium usually through which applicants obtained appointments overseas. It may well be that the Argentine government will wish to continue the services of consultants who have accumulated specialised knowledge of Argentine requirements over many years of intimate association with railway operating conditions. Such expert advice is advantageous not only when selecting technical staff, but also in an advisory capacity relative to the latest railway practice.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Government's Railway Policy

Hove, February 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Page 209 in your issue of February 20, the fifth and fourth lines from the bottom of the second column; shame on you for even suggesting such a communist policy, whether seriously or in jest!

Yours faithfully,

F. S. BOND

[The sentence referred to said: "The Government, of course, can help a good deal to stimulate passenger travel by maintaining its ban on basic petrol."—Ed., R.G.]

Military Appointments to Transport Posts

10, Holyrood Place,

The Hoe, Plymouth, February 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your article deploring the "militarisation" of transport appointments since nationalisation is well timed. The transportation feats of these eminent soldiers tend to leave the general public breathless with admiration.

We, however, know how much of this is due to the operations of the Railway Operating Divisions and we smile a little. Our colleagues performed similar miracles not because of military assistance, but in spite of it.

We do, however, watch these appointments with great interest; I think we await the leader who will ensure that the post-war mental absenteeism of the railwaymen will not return; who will, by his personal interest in their welfare, change this underpaid and under-appreciated body of men into 600,000 contented salesmen whom he has taught to understand that "travel" is a commodity which must be presented for sale in the most attractive manner possible, and that it is their duty to sell it.

This is the *only* foundation on which British Railways can be built, but the prevailing tendency is to complete the "roofing and tiling" first.

May a very humble railwayman be permitted to point out that there is considerable risk in neglecting these essentials.

Yours faithfully,

C. CLEMENT

[Our correspondent does not specify the article to which he refers, and merely to record that a particular military appointment caused surprise, as we did in our February 20 issue, is surely a different matter from deploring it.—Ed., R.G.]

A Veteran Metropolitan Railway Locomotive

57, Ennismore Avenue,

Greenford, Middlesex, February 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The drawing of the Metropolitan Railway Class "A" locomotive, which you reproduced in your issue of February 6, 1948, is of the greatest interest to many of your readers, who, like myself, must have travelled some hundreds of miles in our daily journeys behind these locomotives.

I cordially endorse Mr. Crane's hope that the last survivor of the class, No. 23, will be preserved; and give herewith some further particulars in the hope that they will be of some interest. There were 44 locomotives in Class "A," as follows:—

Engine Nos.	Date built	Width of coal bunker	Weight in working order
1—18	1864	1 ft. 6 in.	42 tons 3 cwt. 2 qr.
19—23	1866	2 ft. 6 in.	42 tons 12 cwt. 0 qr.
24—28	1867	"	"
29—33	1868	"	"
39—44	1869	"	"
45—49	1870	2 ft. 0 in.	Not stated
Heating surface:		Tubes	912.6 sq. ft.
		Firebox	101.2 "
		Total	1,013.8 "
Grate area, 19 sq. ft.			
Tank capacity, 1,000 gal.			

Nos. 1 to 18 were named as follow:—

1 Jupiter	10 Cerberus
2 Mars	11 Latona
3 Juno	12 Cyclops
4 Mercury	13 Daphne
5 Apollo	14 Dido
6 Medusa	15 Aurora
7 Orion	16 Achilles
8 Pluto	17 Ixion
9 Minerva	18 Hercules

At a later date the four-wheel leading Bissell radial truck was replaced by a four-wheel Adams' bogie.

The remaining 22 Metropolitan locomotives were in Class "B," numbered and built as follow:—

Engine Nos.	Date built
34—38	1879
*50—53	1880
*57—59	1880
*54—56	1880
60—64	1884
65—66	1885

* This sequence of numbers is in accordance with the Makers serial Nos.

The principal differences from Class "A" engines were:—

Boiler length	10 ft. 3½ in.
Working pressure	130 lb. per sq. in.
Number of tubes	160, 2 in. dia. outside
Inside firebox	5 ft. 1½ in. long by 3 ft. 6 in. wide
Outside firebox	5 ft. 9 in. long by 4 ft. 0½ in. wide
Heating surface	Tubes 885.7 sq. ft.
	Firebox 90.8 "
	976.5 "

Grate area 18 sq. ft.

The coupled wheelbase was reduced to 8 ft. 1 in. and the overall wheelbase to 20 ft. Side tanks, 14 ft. 9 in. long by 3 ft. 8½ in. high inside; capacity, 1,140 gal.; coal bunker, 2 ft. wide by 3 ft. 10 in. high; total weight in working order, 46 tons 15 cwt. They were built with an Adams bogie at the leading end.

Yours faithfully,

W. BABAGE

Livery of British Railways

Marlborough Club, February 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In these days, when Britain is facing economic disaster, and when ten millions of the population might easily starve within a year or two, do you not feel that the pother about a standard livery for the railways, or the waste of labour and materials in painting "British Railways" on tenders, is very unrealistic?

We are in no danger of confusing British Railways with either the Romney, Hythe & Dymchurch, or the French or German railways!

There can only be one justification for expenditure of this kind, and that is to improve the morale of the railwaymen and encourage them to work their best. That being so, the decision on whether or not to adopt a standard livery for the railways should rest, not with a few top executives, but with the rank and file of the railwaymen themselves, by means of a Gallup Poll or a referendum. That would not only be democratic, but good "management," do you not agree?

Yours faithfully,

KENNETH CANTLIE

Stephenson Valve Gear

Kodak Limited,

Wealdstone, Middlesex, February 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The appearance of the new L.M.S.R. (for it is an L.M.S.R. and not a British Railways inception) Class "5" locomotive with outside Stephenson gear is one of the most interesting events in connection with locomotive design which has occurred for very many years.

Your article in the February 20 issue mentions Dean's 2-2-2 of 1884, but does not comment on the important point that this had *inside* cylinders, a fact which simplified the constructional problems very considerably. You also refer to similarities with certain Old Crompton engines. It would appear, so far as my somewhat scanty records show, that the old L.N.W.R. Crompton *Courier*, a 4-2-0 (the four carrying wheels being fixed in the main frame and not a bogie) had this arrangement (date, 1847).

The matter is made the more interesting from the fact that early last year, in the course of some correspondence in the columns of your contemporary, *The Engineer*, Mr. Holcroft advocated exactly this type of gear, in a form identical with that Mr. Ivatt has produced.

It is significant that the (late) Great Western has persisted in Churchward's policy of applying Stephenson gear with long travel and launch type links to all its long series of two-cylinder (outside) engines right down to the latest "1000" class, and has used Walschaerts only on its four-cylinder classes where an inside Stephenson would be a very difficult mechanical proposition so to arrange that it possessed adequate strength and wear-resisting capacity. If this experimental engine on the London Midland Region is successful, possibly

we shall see similar applications to a future "Castle" or "King" class.

There can be little doubt that of all the practicable valve gears suitable for locomotive work, intended to operate a slide or piston valve, Stephenson's gear, properly applied, is the best from a functional point of view, closely followed, probably by Allan's gear. It is a sobering thought that with all the brains and ingenuity that has gone into this branch of steam engineering, the invention of Howe, 105 years ago, not only never has been bettered, but never equalled. If it is not against "The National Interest," it would be extremely interesting to have some constructional details, and even more interesting to have the valve setting and details of the proportions of links, eccentric rods, and return crank setting.

It is an experiment, the results of which all students of the locomotive will follow with the keenest interest, and it is sincerely to be hoped that the fullest possible information will be made available in connection with it.

Yours faithfully,

K. N. HARRIS

Standard Gauge for Africa

49, Howberry Road,
Edgware, February 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—From recent questions in Parliament it appears that the 1946 groundnut crop in Nigeria had not yet been brought to the coast for shipment, owing to lack of railway rolling stock; also, that rolling stock available elsewhere could not be utilised as the gauge was different, and new rolling stock on order would take some time to deliver. Certain West African railways are of narrow gauge, 2-ft. and 2-ft. 6-in. A new railway is required also for the East African groundnut scheme,

and the nearest railways to this have the medium gauge of one metre. It is abundantly clear that neither of these gauges can survive, as the larger, 3-ft. 6-in. medium gauge of the Union of South Africa and Cape to Cairo railways is vastly predominant.

Surely it is time that the gauge problem in Africa was settled, and it is to be hoped that the new East African line will be built to the normal gauge of 4 ft. 8½ in., and that the Nigerian line will be converted at once to this wider gauge; instead of spending more money on obsolescent gauges which will have to be converted sooner or later.

Even on the larger, 3-ft. 6-in., medium gauge, though its rolling stock is as large as that carried on the wider gauge in Europe, it is much smaller than can be carried on the 4-ft. 8½-in. gauge as fully developed in America, and in any case it cannot compete with the wider gauge in the matter of speed. Hence, it is much inferior to the latter in ultimate capacity, and the handicap of limited speed will be felt increasingly as time goes on, making it quite unsuitable for the main railway gauge of so vast a continent.

Moreover, the normal, 4-ft. 8½-in., gauge is already well established in Algeria and Egypt and was originally that of the Cape railways, which were converted to 3 ft. 6 in. on the fallacious belief that this was much cheaper, although at equivalent capacity the extra cost of the wider gauge would at most be 10 per cent. Furthermore, the wider gauge will be actually cheaper for the much larger capacity which eventually will be required (maybe even for that needed for the present groundnut schemes). Nor will conversion costs be excessive if taken in hand at once, but these will increase more or less rapidly as traffic and length of line grow.

Yours faithfully,

H. W. S. HUSBANDS, M.C., A.M.I.C.E.,
Chartered Civil Engineer

Publications Received

Pullman and Perfection. By F. Burt and W. Beckerlegge. London: Ian Allan Limited, 252, Vauxhall Bridge Road, S.W.1. 7½ in. × 4½ in. 40 pp. Price 1s. 9d.—Within the small compass of forty pages, the authors have been able to compress a vast amount of information regarding the running of Pullman cars in Great Britain during the period of 70 years since their introduction. This has been made possible only by their comprehensive knowledge of the subject and by the generous use of well-arranged tables. There are short illustrated chapters relating to the respective pre-grouping companies, and two appendices listing all cars in service and all cars withdrawn, together with details of builders, principal dimensions, and so forth. Though small, this pamphlet is likely to become the standard reference work on its subject.

The German Locomotive Industry. Prepared by British Intelligence Objectives Subcommittee (B.I.O.S.): Final Report No. 430, item No. 32. London: H.M. Stationery Office, Technical Information & Documents Unit, 38-46, Cadogan Square, London, S.W.1. 9½ in. × 7 in. 141 pp. Illustrated. Price 15s.—Despite the severity of the damage by Allied air attacks, the present potential of this formerly important German industry is sufficiently great to justify this comprehensive survey. By far the most important single item dealt with in the report is the Krauss stayless locomotive-boiler, which appears to have been brought to a very satisfactory stage of development during the war. The Henschel condensing-locomotive design also is discussed. Careful estimates of the capacities of the different works visited are given, with notes on any machinery or constructional methods which were of special interest, and lists of the documents and drawings removed. In addition, much information on administrative conditions is given. The notable work done by J. M. Voith, of Heidenheim, on diesel-hydraulic transmissions is noticed; other important

diesel locomotive works visited were Krupp, of Essen, and the Klockner Humboldt Deutz factory in the Cologne area. Generally, the report forms a valuable review; it is a pity that the Krauss stayless-boiler is the only item which is illustrated, as many of the other features comprised in the report would have been better appreciated if diagrams had been included.

An Introduction to Engineering Economics for Civil Engineering Students. London, 1947: Booklet published by the Institution of Civil Engineers, Great George Street, Westminster, S.W.1. 8 in. × 5½ in. 48 pages. Price 1s.—This handbook has been issued by the Post-War National Development Committee of the institution to enable students to appreciate more fully the application of economics to their work, but it also contains valuable information with which the experienced engineer may be glad to refresh his memory.

The earlier chapters deal with all phases of economics as applied to engineering generally, such as finance, accounts, costs, depreciation, running costs, overheads, planning and design, construction, guarantee and tolerance, tenders, and mathematical solutions. Then follows a series of interesting examples of how the economic values of alternative methods of carrying out various kinds of civil engineering works can best be assessed and compared.

Example IX, for instance, compares the economic merits of alternative lines of railway as surveyed to connect points A and B, separated by a hill or mountain ridge. By tunnelling under the ridge, a comparatively level two-mile line can be built from A to B at a total cost of about £247,000, but its construction will take two years to complete. On the other hand, an alternative line can be carried over a pass, but it will be six miles long and require a three-mile climb at about 1 in 80 ruling grade, and a similar counter grade. It can be constructed, however, in one year for about £151,000. There are there-

fore, the greater operating and maintenance costs of the latter line to be considered and capitalised; these are all worked out in the handbook. The tonnage to be moved in each direction, engine power, trainloads, maintenance charges, depreciation, running costs—taking into consideration grades, curves, and length of line—all are assessed in considerable detail. To offset these factors there is the shorter time required for construction affecting the capital outlay, and this is computed on a 3 per cent. basis.

The conclusion arrived at is that the longer route will be the more economical for carrying the immediate volume of traffic offering, but with the prospect of considerable increase in that volume, and assuming also that an appreciable rise in cost of locomotive fuel is to be expected in the near future, the tunnel route is proved finally to be the more economical proposition.

Another example proves that a sum of £115 may be spent economically in reducing the weight of an electric railway passenger coach design by one ton, in order to effect a saving of £10 a year in cost of current for traction. The life of the coach is assumed to be 20 years, interest on capital 5 per cent., and depreciation fund at 3 per cent. The handbook concludes with three valuation tables and an appendix on mathematical derivations.

Roll Grinding and Internal Cylinder Grinding Machines.—The Churchill Machine Tool Co. Ltd., Broadheath, Manchester, has issued two lavishly-produced brochures, the first of which illustrates the use of precision-ground rollers, finished on Churchill grinding machines, in a wide variety of industries. The second publication concerns machines for grinding bores in parts which cannot conveniently be rotated. The machines operate on the planetary principle, the grinding wheel moving in a circular track or path, while rotating at high speed on its own axis. Both publications include full description, diagrams and specifications.

The Scrap Heap

THE COST OF IGNORANCE

There are two nations to-day: those who realise the plight of Britain, and the looming catastrophe which threatens the British economy and perhaps the British way of life; and those who still cherish the illusion of prosperity, the full wage packet, and the easy profit. In recent weeks, thanks largely to the frank realism of Sir Stafford Cripps, the gulf of understanding between the two has narrowed. But it must be reluctantly confessed, even now, that the majority of the people are still unable, or unwilling, to form any conception of the economic—and ultimately the political—peril in which the country stands. Unrelieved gloom, like intense cold, soon ceases to act as a stimulus; it quickly numbs the senses and paralyses the muscles.—From *"The Economist."*

SHIPS ON RAILS

It is reported that a plan for a ten-track railway to carry ships up to 25,000 tons in a wet dock on bogies for 140 miles from the Gulf of Mexico to the Pacific Ocean, is being put forward by a Mexican engineer. His scheme would link Puerto Mexico, on the Gulf Coast with the Pacific port of Salina Cruz.

The desire for alternative communications between the Atlantic and Pacific arose from a refusal of the Panama authorities to allow the United States to retain bases in Panama, and from the difficulty of defending the Panama Canal in wartime.

ROAD-RAIL COMPETITION

Unless Britain continues to have strong, independent, technical competition between road and rail transport, both systems will gradually become less efficient. I have seen it stated somewhere that, with the exception of superheating, no major development in railway practice has been started by a State-controlled railway. . . .

It is very difficult to gain even an idea of the relative cost of running passenger trains and buses. Using pre-war results on very broad lines, and neglecting the fact that

buses can provide a more frequent and convenient service than trains, but taking the carrying capacity of each into account, it looks as if a passenger train service is about one-third dearer to run than a bus service.

Might I suggest that one way of endeavouring to meet the position that is most likely to arise would be to form a "Scottish Passenger Association"?—Mr. Symington Macdonald in a letter in *"The Scotsman."*

"Functional," or What's in a Name?

Once upon a time it was the custom for a Scottish judge to take his title from his landed estate. When Sir John Lauder of Woodhead, East Lothian, was elevated to the bench, he was constrained for obvious reasons to alter the name of his property and took his seat as Lord Fountainhall. On much the same grounds would the Railway Executive not be wise to cease to call six of its members "functional officers"?

Functional means the opposite of organic and the word is used to denote many disorders of the nervous system. Mental diseases, according to medical textbooks, are often purely functional and hysteria may also be so. *Absit omen!*

100 YEARS AGO

From THE RAILWAY TIMES, March 4, 1848

AMONG the events of the week which we have to record, one which affords us the highest satisfaction is the announcement that the Directors of Rastrick's Direct London and Manchester Railway are about to make a further return of 10s. per share. We advert with the greater gratification to this avowal of integrity of purpose, because it has been our unpleasant duty to record frequent applications from shareholders upon the subject of the delay which has taken place in this return. The vindication of the character of such schemes as Rastrick's Direct London and Manchester Railway becomes, from the importance and reputation of those who lent their names to the undertaking, an act of high necessity, and we rejoice, even at this late hour, to find that this necessity is in course of recognition by the Board of Directors.

THE PUFFING MANNEQUINS

As winter leaps out like a lion, the first of the spring fashion parades is announced. It will take place in May, on British Railways, when eight train services, clad all over in new paint, will mince up and down the line before a critical audience.

There will be passenger engines in green, goods trains in black, carriages in cream and chocolate, and expresses in two shades of simply heavenly blue. Public reaction will determine the final choice of colours for State railway enterprise.

This announcement will bring unimaginable joy to all small boys who stand on bridges, counting engine numbers and tasting nectar in the acrid whoosh of smoke from trains thundering beneath them.

But the boys will not be half so glad as the many grown men who have been fretting themselves thin over the threat of nationalisation brings to what they call—in capitals—The Romance of Railways.

There are, indeed, few enthusiasms which can grip a man so passionately, and make him their doting, dotty slave as an infatuation with trains. There are men who, on the grounds of picturesque alone, would far prefer to travel up to Glasgow by Stephenson's *Rocket* than by the "Flying Scotsman."

The character in Sheridan's play "The Critic," amazingly anticipated their habitual conversation when he said: "Yes, sir, puffing is of various sorts; the principal are the puff direct, the puff preliminary, the puff collateral, the puff collusive, and the puff oblique or puff by implication."

The worry which these stalwarts have been undergoing is well evident in the columns of one of the most serious-minded of the weekly journals. For weeks past this particular paper has interlarded its comments on matters political, literary, and theological, with articles clarioning the danger that under a unified system there will be a tendency to build locomotives all with the same number of wheels, rather than with the variety which heretofore has warmed the cockles of the collectors' hearts.

These clouds are now lifting. The signal, while it may still stand at caution, at least has left the red. The enthusiasts can work up a head of steam, and even permit themselves a cheerful toot or two. No woman, planted in the choicest of Paris salons and told to take her pick would experience half the thrill that they will in the months to come—comparing, wrangling, debating and corresponding over shades, designs and decorations for locos.—From the "Evening Standard."

TAILPIECE

"If it be the fact that this year we are eating the Argentine railways, what are we going to eat next year?"—Mr. J. S. C. Reid, M.P. "The whole capital asset represented by the British-owned railways is bartered away for eighteen months' supply of meat."—*The Economist.*

It should be very easy
In this be-rationed age,
To swallow up a railway
Of any sort of gauge,
To whet our dentures deeper
On engine, rail, and sleeper,
Our hunger to assuage.

It should be very easy
To rid us of our fears,
And solve the little problem
Of food for coming years,
When all the trains are swallowed,
And rolling-stock has followed,
There's still the passengers.

E. C.



"All right, then—DON'T mind the doors"

[Reproduced by permission of the proprietors of "Punch"]

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

BURMA

New Locomotives in Traffic

Eight "YB" class 4-6-2 locomotives were put into service during January. A brief description and illustration of one of these engines, of which 50 have been ordered from the Vulcan Foundry Limited in Great Britain, appeared in *The Railway Gazette* of November 7, 1947. It is expected that a further 23 "YB" class and two shunting tank locomotives will be received by the end of February.

Extension of Services

Last December the line from Ywataung to Alon was reopened for all classes of traffic. A temporary bridge between Kawlin and Wuntho on the Myitkyina line was restored, and on January 1 a service was resumed between Sagaing Shore and Wuntho. Work is proceeding as rapidly as the supply of materials permits with rebuilding bridges on this line between Naba and Bonchaung, in order to permit the restoration of through trains between Mandalay and Myitkyina. Traffic was resumed on the Nawngpeng—Lashio section on January 2; road transport by contractors by-passes the Gokteik Gorge between Nawngpeng and Naungkhio to link up with the western portion of the line. A mixed train runs three times weekly in each direction between Nawngpeng and Lashio.

INDIA & PAKISTAN

Wage Increase in Bikaner State

An increase in salary of Bikaner State Railway employees has been sanctioned by the Bikaner Government with effect from January 1 this year. Under the new rates, the lowest paid staff receive about Rs. 54 a month, whereas the monthly living wage recommended by the Pay Commission for such staff is Rs. 55. A new employee entering the service direct from school, however, will receive Rs. 84 a month.

Chittagong to be Expanded

As the bulk of the export traffic from East Bengal, namely tea and jute, which used to be shipped at Calcutta, now will have to be exported via Chittagong port, the Eastern Bengal Railway has drawn up a scheme for the expansion of the yard and other railway facilities at Chittagong.

Industrial Development in Karachi

Karachi, the southern terminus of the North Western Railway, has expanded considerably in recent years, and now that it is the capital of the new Dominion of Pakistan, still further expansion is inevitable. In order that this may follow some orderly scheme, a town planner has been appointed by the Government of Sind to prepare a co-ordinated plan. To provide for transport in Greater Karachi, sanction has been accorded by the Railway Department for an engineering and traffic survey for a railway from the neighbourhood of the docks to Drigh Road, a station some 9 miles up the main line, and passing through the country it is proposed to develop to the north of the existing town.

Work on an industrial trading estate in this area has begun already, and a few factories are now working. To serve these, and for the transport of constructional

materials for additional buildings, a siding some 4 miles in length has been laid by the North Western Railway. Railway development in this area undoubtedly will be required as the activities increase.

Fuel Shortage Restricts Pakistan Services

In the early part of January, as the fuel position on the North Western Railway showed signs of considerable improvement, there was a lifting of the restrictions on booking of goods, and movements increased greatly. During the month the position deteriorated again and it was necessary to make drastic cuts in train running, both goods and passenger. In the latter case, the present position is worse than it has ever been. For example, the mail train between Karachi and Quetta now runs only three times a week.

To conserve coal stocks, the "Karachi—Lahore Mail" is being run entirely by oil-burning locomotives, but this has necessitated the use of a lighter type of engine for some portion of the run, with a consequent reduction in speed. Other locomotives have been and are being converted to burn oil, and it is intended to extend the use of oil as and when these are ready and shed facilities are prepared.

SOUTH AFRICA

Demand for Wagons

The Union being a country rich in mineral resources, the railways have to provide thousands of wagons for the transport of ores. The chrome industry is making heavy demands on wagon stocks. In 1939 only 119,415 tons of chrome ore were exported, but if the present rate of loading is maintained the indications point to the record tonnage of 309,000 for 1942-43, being exceeded in 1947-48.

At times restrictions on loading have had to be imposed, but this measure to conserve wagons is resorted to only when conditions make it imperative. The flow of new wagons into service has become appreciably greater in the last few months, and the current year should see much improvement in this respect. Another phase of rail traffic now on a very high level is the conveyance of livestock. During 1947 over 7,000,000 head of livestock were moved, for which more than 4,300 wagons were needed.

Railway Estimates

The estimates of expenditure for the services conducted by the South African Railways, for the financial year 1948-49, have been tabled in the House of Assembly by the Minister of Transport, Mr. S. F. Waterson. From revenue funds the total estimated expenditure is £81,187,000; and from loan & betterment funds, the amount to be expended on capital and betterment works is £27,183,664. These figures include the estimated expenditure on the services in the mandated territory of South West Africa, which are operated as part of the Union's railway services. Provision has been made for the transfer to the rates equalisation fund of £140,715 surplus revenue of the Railway & Harbour Fund for the financial year ended March 31, 1947.

Railway expenditure from revenue is estimated at £75,041,000, as compared with £70,530,000 in 1947-48; harbour expenditure is assessed at £3,359,000 as compared with £3,125,000; expenditure on steamships

at £503,000 compared with £352,000; airways expenditure at £2,235,000 compared with £1,809,000; and expenditure on aerodromes at £49,000 compared with £23,000.

Of the £27,183,644 to be spent from loan & betterment funds, £12,473,059 is for new works on open lines; £10,199,597 for rolling stock; £1,214,859 for road motor services and £1,200,000 for aerodromes.

Rolling Stock Orders and Construction

The Minister of Transport stated in the House recently that 100 Class "24" steam locomotives were ordered from overseas in 1947. In 1946, 12 air-conditioned coaches, 95 main-line coaches, and 132 suburban coaches were ordered, and in 1947, 150 main-line coaches. In 1947, 5,655 wagons of various kinds were ordered from overseas; also 1,500 cattle wagons, 500 fruit wagons, and 200 goods vans. In 1946, 12 suburban coaches and 7 main-line saloons were built in the administration's workshops, and in 1947, 22 suburban coaches. Wagons built by the administration in 1946 were 854, and in 1947, 968.

In the case of the locomotives, an overseas tender was accepted at the provisional price of £19,450 each. Of the 150 main-line coaches ordered, 100 would cost over £12,000 each, and 40, of Type "H21," would cost £9,759 each.

UNITED STATES

Long Island Operations in Snow Storm

Hearings have been conducted before the Public Service Commission's Railroad Bureau in New York regarding services on the Long Island system during the record 26-in. snowfall of December 26 last year.

Evidence was given that on that day 116 of the 342 trains operated ran late, and that on the day after the storm only 2 out of 522 scheduled electric trains were operated at all, both being late. It was pointed out by the railway company's solicitor, however, that these figures disregarded the fact that many unscheduled shuttle trains had been operated on both days.

Mr. E. L. Hoffmann, Superintendent of the Long Island, said that in fact 242 shuttle trains were operated on the electric lines on December 27, and that most steam train services were performed. The storm had cost the Long Island more than \$1 million, and he asserted that the difficulties in meeting the situation arose partly from misleading official weather forecasts, and also from the fact that several tracks were put out of use by a level crossing accident.

New Electric Locomotives for Virginian Railway

The first of four two-unit electric locomotives built by the General Electric Company for the Virginian Railway was handed over to that system on January 14. They have a rating of 6,800 h.p. The locomotives operate on 11,000 V. from an overhead line, the traction motors being fed from two generators driven by 4,000-h.p. synchronous motors. Their main duty is the haulage of 10,000-ton coal trains at moderate speeds on heavy grades, and they are able to develop a continuous tractive effort of 162,000 lb. at 15½ m.p.h.

The new locomotives have a streamline body and measure 150 ft. 8 in. overall. The body of each unit is divided into three compartments, one containing the motor-generator set, transformer and auxiliary equipment; one for miscellaneous equipment; and the third for the driver.

British Railways Under Nationalisation

An address to the Permanent Way Institution on January 31, by Mr. J. C. L. Train, M.C., M.Inst.C.E., Member of the British Transport Commission's Railway Executive

Some people have said to me in the last few weeks that it was unfortunate nationalisation of the railways and the consequential changes were an accomplished fact. My reply has been the same in each case, namely, that the country by constitutional procedure had decided this for us, whether we agreed with nationalisation or not, and that as patriots we had to do our best to make it a success. In other words, because British Railways come under one control, that is no reason why as railwaymen we should not take a pride in our job as we have always done and try to make British Railways pre-eminent in the world.

Re-organisation consequent upon nationalisation is likely to be of benefit to some, and less fortunate for others; in fact, on amalgamation in 1923 I remember making much the same remark, namely, that a change was unfortunate, and at that time some of us were affected for the better and some, apparently, for the worse. I say "apparently" because I thought I had been unlucky, but I have since had reason to doubt the accuracy of this judgment. The moral attached to this, of course, is: Do not be too hasty in assuming that the changes which came on January 1, 1948, are necessarily going to affect you adversely. In fact it may very well be otherwise.

I also suggest that the keenest opponent of nationalisation before January 1 would probably have agreed that the main-line companies as we knew them in 1939 could not have continued, for purely financial reasons, and that considerable changes in our railway life would almost certainly have come in any case.

I was, until a few minutes ago, your President, but in addressing you on this subject, which I suggested, and which was accepted by the Institution, I am in a somewhat awkward position because as a member of the Executive I am taking my part in the re-organisation of British Railways, and I may therefore be considered prejudiced. I ask you therefore to allow me to deal with my subject as a "Dr. Jekyll and Mr. Hyde." In the first place I am going to ask you to look on me as an ordinary railwayman giving you my views on the new organisation set up under the Transport Act, and in the second place I am going to ask you to look on me (a) as a member of the Executive, as a body, and (b) as a functional member of that body. I propose to describe to the best of my ability how the new organisation is to be worked and some of the difficulties facing it.

The Transport Act

Under the Act a British Transport Commission was set up and the following Executives were to be appointed: the Railway Executive; the Docks & Inland Waterways Executive; the Road Transport Executive; the London Transport Executive; and the Hotels Executive.

The only Executives in which you are likely to be interested are the Railway Executive and the London Transport Executive, and for obvious reasons, without showing any disrespect to the L.T. Executive, I must base my remarks on the organisation as it affects British Railways, with which I am familiar.

In the main the British Transport Commission controls finance, while the Railway Executive as a body can be likened more to a super General Manager, with very considerable powers delegated to it in the way of authorising salaries, works, and other policy questions, so that up to a point the Railway Executive does undertake much of the work of the previous railway directors as well as management. You will recall that under the Act railway staff come directly under the Railway Executive, and are not servants of the British Transport Commission.

I had no share, of course, in framing the Transport Act, and I can say quite impartially, therefore, as a railwayman, that those responsible for drafting it have been wise. It was laid down that the Minister of Transport would appoint the members of the British Transport Commission and the Executives, the latter in consultation, of course, with the Commission. It has turned out in practice, however, that as the Permanent Secretary to the Minister of Transport, Sir Cyril Hurcomb, was appointed as Chairman of the B.T.C., the man in supreme charge is responsible not only for running the machine, but must have had some voice in its design.

The Railway Executive

Before describing how the Railway Executive is made up and what its duties are, I will remind you of the magnitude of the task with which it is faced. It is responsible for controlling a system with a staff of about 635,000 men and women, of whom 96,000 are in the Civil and S. & T. Departments. Track mileage is about 52,000, which would encircle the world more than twice. On these tracks trains run about 373 million miles a year, carrying more than 1,200 million passengers. About 20,000 locomotives, 40,000 carriages, and more than 600,000 wagons run on the system; approximately another 600,000 privately-owned wagons have been taken over. The Railway Executive is responsible for carrying 226 million tons of goods a year, more than half of which is coal.

Coming now to the actual composition of the Executive, I think most of us felt that when Sir Eustace Missenden was appointed Chairman of the Railway Executive, a good start had been made by appointing a practical railwayman with long experience. Then, when it became obvious what the constitution of the Executive was to be, most of us also thought, I imagine, that it was sound. In other words, the Executive was to be made up of experts in different aspects of railway working. Whether the right individuals have been selected as the experts is a matter which has to be proved as time goes on, but I suggest that the conception was sound. The Railway Executive consists of seven full-time members, and two part-time members. Six of the full-time members are men with long experience in one or more branches of railway work, and the other full-time member, together with two part-time members, have the advantage of not having been railwaymen, but have been prominent men outside the railway industry. I consider this an advantage because the best of railwaymen are apt to have prejudices, and

naturally are railway-minded. If the Executive is to take a balanced view of the numerous problems with which it is faced, it must have a leavening of outside opinion.

With the Executive thus constituted, whatever subject may come up for discussion, one member can almost invariably give an expert opinion on it, and assist the other members to come to a wise and reasonable decision.

Apart from this advantage, it was essential to have experts on the Executive to ensure unification. In other words, however desirable it was to aim at decentralisation it was obvious that four large main line companies, and various minor railways, all with varying practices and different standards, could not be unified except from headquarters. The gentlemen on the Executive being experts in various branches of railway work can, therefore, ensure that unification, or standardisation without stagnation, can be achieved.

Summing up what I have said as a railwayman, the stage is set, or nearly set, and I think that the form of control visualised by the promoters of the Transport Bill, and now in process of being developed, promises well for the future, provided that all railwaymen play their part and give the new organisation a fair chance.

The New Organisation

As a member of the Executive I am going to describe how the new organisation is intended to work, and the principles which the Executive had in mind in recommending this organisation to the British Transport Commission. The organisation consisting of the Executive and Regions is certainly unique in this country, and for this reason it would be foolish for the public, railwaymen, or the press to form too hasty a conclusion as to its merits or demerits. When I say that the organisation is unique I mean that the members of the Executive have a dual function. They have to meet as a body and take decisions, or make recommendations, to the B.T.C. according to the magnitude of the problem in hand, and they are responsible as a body for such decisions or for recommendations put forward. For instance, the Executive as a body may have to debate at a meeting such varied questions as rates of pay and conditions of service; liveries of locomotives and rolling stock; permanent way renewal programmes; signalling schemes; or winter or summer train services. One member expert in any one of the matters to be debated may submit a memorandum for the assistance of the Executive as a whole, but each member is expected to study the subject in hand, and to give the Executive the benefit of his comments, even if the subject is one which he would not have dealt with previously in his former field of activity. The Executive as a body will hold also regular meetings with the Chief Regional Officers, when misunderstandings can be cleared up, suggestions made to improve the organisation, and major problems confronting any particular region discussed.

The members of the Executive also have another duty, as functional members, which I shall consider subsequently.

The Regions

It was obviously necessary to divide the country up into railway units, and in consultation with the B.T.C. it was decided to employ the term "Region," this name having the advantage that it was not likely to be confused with any designation hitherto employed by the mainline companies. For the time being, therefore, six

Regions have been set up, the headquarters of four being in London, and two outside London. It may be that in time further regions will be created. It is not strictly correct to compare the Chief Regional Officer of each Region with what we have hitherto known as General Managers, or Chief General Managers, because in some respects he has more power and in others less power. In common with former General Managers he has under his control heads of departments, and he is responsible for co-ordinating the work of all the departments under him in the Region, and for day-to-day working of the railway. His responsibilities and those of the departmental heads under him are considerable, for the size of the Executive Headquarters has had to be kept down, and the principle followed in the new organisation is that as much work as possible must be kept away from the Executive. Obviously, it would not be desirable for the Executive to handle the numerous local problems which arise in the Regions, which can, as a rule, be much better settled by the man with local knowledge and contact. The Chief Regional Officer, or C.R.O., will know, in conjunction with his officers, what additional schemes are necessary to cope with the traffic of the Region, and he will be responsible for recommending such schemes to the Executive.

Equally important is the fact that C.R.O.s and their departmental officers will be responsible for maintaining contacts, as with local authorities and traders in the Region; obviously, this can be achieved more effectively by the man on the spot than by a remote headquarters in London. This also will save many matters coming up to Executive level.

The Functional Member of the Executive

The members of the Executive, having this dual responsibility, have the right to go to the heads of those departments whose interests they are responsible for watching. This is necessary for the purpose of unification. For instance, it would be wasteful for one Region to be designing one type of locomotive, with possibly another Region working very much on the same lines. Neither would it be in the interests of economy or efficiency for one Region to adopt one standard or design of track, or signalling, quite different from that adopted by another Region. Equally, to avoid standardisation spelling stagnation, it is necessary to see that new types or designs are given reasonable trials, while at the same time money is not wasted by an unnecessary number of Regions working on the same problems, or carrying out unnecessary trials. In all these matters it is important to have an expert at headquarters who can ensure that there is unification of the experts' work in the Regions, and I am satisfied as a railway officer of fairly long experience that this can be achieved without the duties of the members of the Executive and the C.R.O.s clashing.

I want to describe in more detail the duty of the functional member, for which purpose I take my own case, because this Institution is interested in permanent way. In describing my own duties I am to some extent also describing to you how other functional members of the Executive carry out their responsibilities.

To differentiate between the duties of a functional member of the Executive and the Chief Regional Officer I would give the following examples. The functional member of the Executive is responsible for ascertaining the practices of different companies in the past, for obtaining recom-

mendations on the future practice which should be followed, and, lastly, for recommending a standard to the Executive, or in some cases obtaining the Executive's blessing to a decision which he has already taken. To take a simple illustration, the functional member, with the help of the heads of the Civil Engineers' Departments in the Regions, will arrive at a standard design of platform wall, but the functional member of the Executive is not as an individual interested in where or when these designs are employed. This responsibility falls on the C.R.O. and the heads of the departments under him; in other words, the C.R.O. will decide where he wants new platforms, or platforms extended. If the expenditure is considerable he gets approval for it from the Railway Executive, and when the scheme has been authorised, either by himself or by the Executive, the Engineer then builds the platform to the standard designs most suitable to the location.

Obviously there are a vast number of problems of the same description where standard designs must be made, or methods standardised, but in view of the varying practices of the former main-line companies this will take a long time in all departments. I would like to emphasise that the members of the Executive intend to be as broadminded as possible in adopting standard designs or practices. I am trying to concentrate on the fact that I am now associated with British Railways, and that I am not interested any longer in what was formerly any one main line company. If we all make up our minds to take the best from each company and apply that as a standard then, to my mind, that is the correct method of approaching the problem. All companies had some good practices worth following, but it would be unreasonable to adopt the standards of any one company. The staff in the Regions are certainly expected to take a pride in their Region, and I hope that there will be a competitive spirit to this extent, but I also hope that all staff will recall that they have a duty to British Railways, and that old prejudices are not allowed to stand in the way of loyalty to the organisation as a whole.

I have given a simple example of what I as a functional member hope to achieve, and I must now describe the method by which I hope this will be achieved.

Under the former Railway Executive Committee, which functioned so efficiently during the war, committees representative of most departments were set up, and they reported to the Railway Executive Committee. These committees have been retained very much in the same form under the Railway Executive; in fact Mr. Wallace, for the Civil Engineers, and Mr. Wood, for the S. & T. Engineers, have helped the new organisation enormously by agreeing to continue their chairmanship of the committees for which they were responsible before January 1. Because new Regions have been created, with possibly others to come, membership of the committees has increased, and might be further increased. As certain subjects are of common interest to the London Transport Executive as well as to the Railway Executive, a representative of the former Executive attends meetings of the Railway Executive committees when necessary and the minutes covering subjects of common interest are forwarded for approval of both Executives.

The staff I have at headquarters is a skeleton staff. For instance, I have no drawing office under my direct control at

headquarters, and any drawings made, whether of standard designs or anything else, have to be made in one of the Regional drawing offices. The present organisation is to some extent on trial, and I hope that it will not be necessary to have a drawing office at headquarters, but I cannot commit myself in this direction until I see how things work out, because at the Executive we must follow the guiding principle I have outlined, that work must be kept away from the Executive; otherwise, even in these times when we have all become used to masses of paper, the Railway Executive would be overwhelmed.

Describing then the present method of working, so far as I am concerned, and taking again the example of the platform walls, the procedure would be as follows. I would write to Mr. Wallace, Chairman of the Civil Engineers' Committee, that the Executive considers it time to standardise designs of platform walls, and would he please take the necessary action in the matter. He would then put the matter on the agenda for a meeting of the Civil Engineers' Committee. Civil Engineers would come to the meeting with particulars of designs adopted by their former main line companies, and it would be decided tentatively what the new standard designs should be. The meeting would allocate to one Engineer the responsibility for having the drawings made in his Regional drawing office. When completed, these drawings would be circulated to the other Engineers and, if necessary, myself, and when comments had been obtained the drawings would be altered if required, or if agreed, would be adopted as standard. Chief Regional Officers receive copies of the various Departmental Committee minutes so that they are kept informed and can express their views either to the Regional Engineer or to the Railway Executive.

If it were desirable for reasons of urgency to obtain information on technical questions more quickly than would be possible by this procedure, rather than put too heavy a burden on the Chairman of the Civil Engineers, or that of any other committee, as a functional member I would write to the Chief Engineers or the Engineers of each Region, and obtain information direct. In the event of my giving any decision on a technical matter the Chief Regional Officers receive a copy of it.

To turn from standard designs to standard procedure, I need only mention items such as renewal programmes, and to take permanent way as an example. It is again obvious that the same procedure must be followed by each Region both in the compilation and the submission of these programmes. Lines will have to be classified on the same basis; materials to be laid in, and lines of various classifications will have to be agreed, and the date of submission of the permanent way renewal programme to the Executive must be decided. These questions will, it is hoped, be largely accomplished through the medium of the Civil Engineers' Committee.

I could give similar examples in the case of signalling and telecommunications, but I have taken the Civil Engineers' Committee, more particularly the permanent way, because as an Institution you are more interested in this.

I would again emphasise that because designs of permanent way may be standardised and the method of compiling and submitting programmes similarly standardised, that does not mean that a new design of rail or track cannot be tried out in one or more Regions or a

revised procedure adopted. It is recognised by all that new designs, new machinery and new methods must be tried out in Regions, despite standards which have been adopted, if in the course of years there is to be the necessary revision of standards.

The Human Factor

I gave a paper before the London Section of this Institution entitled, "The Human Element in Relation to Railway Engineering," but bearing in mind what I said in that paper which the Institution has been good enough to publish, I cannot describe the responsibilities of the Railway Executive, the Chief Regional Officers, and the Departmental Officers under them, without referring again to the human factor.

Those of us who have, so to speak, no politics, and who are prepared to work the railways in accordance with the national interest under any organisation, had one natural fear that the vaster the organisation became the more difficulty there would be in maintaining the necessary human contacts. Some of us were fearful of this on amalgamation in 1923, but I am hopeful that, formidable as the task may be, bearing in mind the number of staff which the Railway Executive controls, we will surmount that difficulty.

The member of the Executive who has been made responsible for staff matters is Mr. Allen, who is very alive to this problem, as are other members of the Executive, and although it is early to forecast what the result will be, I am hopeful that we may be able to make all in the service

of the Railway Executive feel that their interests are being watched, and that they have not become simply cogs in a still larger wheel. Some of the ways in which this problem could be tackled and is being tackled in some cases, are outlined below.

Mr. Allen already has in hand the question of safety, health, welfare and social activities, which have played such an important part in our railway life in the past. More encouragement will be given to these essential things in the life of a railwayman under the new organisation.

Closely connected is the question of improving the conditions wherever possible of cabins, messrooms, washing facilities and lavatory accommodation. The Executive, and particularly Mr. Allen, have in mind that a contented and healthy staff is much more likely to perform their duties efficiently than staff which is discontented with the conditions under which they are called upon to work.

Ways and means of ensuring that staff in various departments can be given instruction in their duties, and the reason for them will also be considered. Fortunately, it is accepted today, for the reason that human beings are not machines, that they are only likely to give of their best if the problems they are asked to tackle are fully explained to them.

Closely allied with this question of education is that of advancement. The aim will be to ensure that all members of the staff are given an opportunity of coming to the top if they show the necessary ability.

Mr. Allen, with the approval of the

Executive, is building up an efficient British Railways staff section, which will allow the Chief Regional Officers to perform the responsible duties thrown upon them and will yet facilitate prompt decisions on staff matters. An endeavour will be made to ensure that the wages, salaries and conditions of service under the Railway Executive are appropriate, taking into account the economy of the industry itself and the country in general.

Consideration is also being given to unfying arrangements for superannuation and pensions on retirement, so that everyone in the service is provided for in one way or another. The Railway Executive has only been in existence for a few weeks, and it is impossible, therefore, to be more specific on these staff matters, but the Railway Executive has at least a goal, or to be more correct, goals in view.

In case this paper should lead you to think that I am too readily on with the new love and off with the old, I would, in connection with staff, say this. Some of our directors in the past have made a point of going round with officers, talking to men of all ranks, and encouraging welfare and social activities. In my own case I have in mind particularly Colonel Murray and Lord Burghley, and from their point of view it did not matter whether the visit was during enemy action, subsequent to it, or under peacetime conditions. It is because from gentlemen like those I mention I have learned the value of the highest having contact with the lowest that I emphasise we must do even better under nationalisation.

Mahatma Gandhi's Cremation Special

Special train for the ashes and mourners from Delhi to Allahabad

(From a Correspondent)

MAHATMA GANDHI'S *Asthi* (the Indian name for the ashes removed from the funeral pyre), was conveyed by a special train from Delhi to Allahabad for immersion in the Sangam, the confluence of the Ganges, Jamna, and the mythical Saraswati rivers. The train left Delhi at 6.30 a.m. on February 11, and reached Allahabad the next day at 9 a.m. The rake of the special consisted of five freshly-painted third class bogies, of which the centre coach had been modified suitably to carry the copper urn containing the Mahatma's ashes.

The middle compartment of the centre carriage was converted into a hall by removing the wooden benches. A large table, covered with the tri-colour national flag of India, was fixed in the centre of the compartment, and on it was placed the palanquin supporting the urn. Overhead was another national flag serving as a canopy. The floor was covered with white hand-spun cloth, called *khaddi*, from which also were made curtains for the doors. Three lights were fixed on pedestals on each side of the table to floodlight the urn, which was visible to the millions who marched past the carriage in the early hours of February 11 at New Delhi, and throughout the following day and night at stations *en route*.

The special carriage was distinguishable by the national flags flying half-mast fixed on either side. The *Asoka Chakra* and the lion's seal, the national emblem, were painted outside the coach. Communication between the *Asthi* compartment and the compartments on each side was pro-

vided by removing the wooden partitions. These compartments carried the near relatives and close associates of Mahatma Gandhi, important political leaders, and officials. The rest of the train was occupied by the Mahatma's select devotees and pressmen. Police and military guards took positions in four corners of the hall and stood on each side of the compartment.

The running of the train had been planned in great detail. It was arranged that the centre of the special coach should be opposite the main entrance of the ceremonial platform and the stopping stations *en route*. To ensure this, a whitewash band, 6 in. wide, was drawn on the platforms and the permanent way to enable the driver to stop accurately. A pilot covered the route 20 min. ahead of the train, which was under the direct control of an officer of the rank of Divisional Superintendent. Senior officers were posted at all important points on the journey. The train was seen off by the Prime Minister and Dr. John Matthai, Minister of Transport, who laid the Ministry of Railways' wreath in front of the urn. The Chief Commissioner of Railways, Mr. K. C. Bakhle, travelled in the special carriage.

All the persons who travelled on the train were required to carry their own food with them. This precautionary step was taken to keep off vendors of foodstuffs, who would have been in the way of the huge crowds, which thronged the stations to have a glimpse of the *Asthi*. Passengers on the train and those present on the platform were required to remain bare-headed

and were forbidden to smoke and chew betel leaves. To mark the solemnity of the occasion, station bells were not rung for the arrival and departure of the special; the blowing of one short whistle by the guard and a short blast by the driver served as the starting signals.

In spite of the crowds, the train ran punctually to the minute and covered its long journey without incident. This was a fitting tribute by the railwaymen of India to Mahatma Gandhi, who valued punctuality and orderliness highly. Their performance on this occasion was acknowledged by the Minister of Transport during the course of his budget speech in the Indian Parliament on February 16.

The special third class carriage which carried the *Asthi* is to be preserved as a national memorial and has been sent to Lillooah Workshops, where is kept also a coach used by another great Indian, Dr. Rabindra Nath Tagore, on his last journey from Santiniketan to Calcutta.

DE-ICING EQUIPMENT FOR LONDON TRANSPORT NORTHERN LINE.—London Transport engineers are completing the installation of 73 de-icing machines on all open sections of the Northern Line. The machines consist of small baths let into the conductor rails, containing anti-freeze liquid which is spread along the rails by passing trains so as to prevent ice forming. Completion of the Northern Line installation means the whole of the tube lines will be equipped with a total of 470 machines. At present the machines are turned on by hand when the code word "Ice 4" is received from the Air Ministry, indicating that icing conditions are to be expected. Experiments are going on, however, to evolve automatic control so that the effect of the weather itself will turn on the machines.

Turbine-Electric Locomotives for the Chesapeake & Ohio Railway

A 6,000-h.p. turbine running at 6,000 r.p.m., is supplied with steam from a conventional coal-fired boiler

IN June, 1947, the first of three 6,000-h.p. turbine-electric steam locomotives for the Chesapeake & Ohio Railway was exhibited at Atlantic City. The design of this locomotive is especially notable, not because of any revolutionary new device, but for the ingenious arrangement of the principal components. The coal bunker is at the leading end, next comes the cab, and then the boiler, followed by the turbo-generator. Water is carried in a separate tender behind the locomotive. The locomotives are being built by the Baldwin Locomotive Works, and have been designed by the technical staffs of the C. & O., the Baldwin Locomotive Works, and the Westinghouse Electric Corporation, working in collaboration.

The new locomotives are intended for high-speed passenger traffic between Washington and Cincinnati, a run which includes long stretches of heavy mountain grades in the eastern portion, and of level-track territory, suitable for high speeds, in the western portion.

Comparison of this design with the geared turbine locomotive (see our May 31, 1946, issue), built by the Baldwin Locomotive Works, in conjunction with the Pennsylvania Railroad, shows that each system has its advantages and limitations (Fig. 1). The turbine-electric drive is somewhat heavier, owing to the d.c. generators; however, the turbine always rotates in the same direction, never slower than 60 per cent. of rated speed. This means a much reduced steam demand on starting. The mechanical drive requires a separate small turbine and clutch for reverse operation. In the Pennsylvania geared turbine locomotive, all the power is applied to four pairs of driving wheels, whereas the Chesapeake & Ohio turbine-electric locomotives have power on eight axles. Vibration and hammer blow are absent from both types.

The main power unit comprises a turbine, a 6:1 reduction gear, and two double-

armature generators. The steam turbine is of the impulse type, having a velocity-compounded impulse-control stage followed by four full-admission impulse stages. Steam flows to the turbine through a seven-valve steamchest cast integral with the turbine-cylinder cover. Each valve is connected by a cored passage to a nozzle group which admits steam to a portion of the control stage. The single-seated diffuser-type valves are connected to a common lift bar. The individual valve stems open in sequence, thus minimising the throttle loss at any opening. The governor-operated hydraulic piston raises and lowers the valve lift bar through a yoke and link. A mechanical strap-type transformer governor, driven from one of the low-speed gear shafts, controls the position of the hydraulic operating piston. The 8-in. throttle valve, located on the side of the steam chest, closes automatically on turbine overspeed.

Turbine and gear have whitened sleeve bearings; a segmental type thrust bearing at the exhaust end of the turbine governs the position of the turbine and pinion shaft. Each low-speed gearwheel journal bearing has a thrust collar which positions the gear and generator shaft.

Built into the gearcase assembly is an oil reservoir of about 200 gal. capacity. Part of the oil is used to operate the governor; the remainder is reduced in pressure through an orifice and is used to lubricate the journal bearings and gears. The oil system contains a magnetic strainer and a shell and tube type cooler, through which boiler feed water is circulated. Automatic bypass controls regulate the temperature of the oil leaving the cooler.

Generators

The two generators have their armatures mounted on the gear shaft with the commutators facing outward. The outer end of each generator shaft carries a pulley which drives, through multiple V-belts,

an auxiliary generator mounted on top of the main generator.

A turbine-driven vertical propeller-type fan, mounted on one side of the main turbine, supplies air to the space between the two stators of each double generator. From this point the air flows in both directions towards the commutators, thus carrying any carbon dust out of the machine. An auxiliary duct carries cold air directly to the generator commutators.

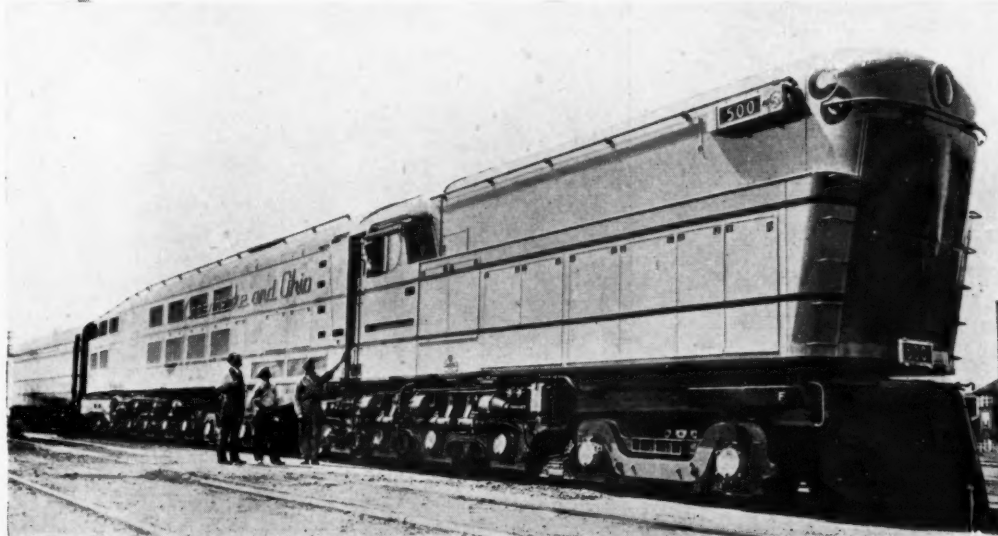
The main generators are eight-pole, multiple-wound, commutating-pole d.c. machines with two windings on the main poles. The main exciting winding is connected to the armature through a regulating resistor. A field discharge resistor is connected through a Rectox unit to prevent excessive voltages when opening the field circuit. The regulating resistor is adjustable in two steps. The first is sufficiently high to prevent uncontrolled build-up; the second permits maximum voltage to be obtained.

A voltage relay connected to the generator armature controls the change-over from one winding to another. The separately-excited field is controllable in eleven steps by the master controller, which obtains its power from the same generators which supply excitation.

Traction Motors

Each of the four generator armatures supplies power to two 620-h.p., 568-volt, 720-r.p.m. traction motors connected in parallel. These are 6-pole series-wound axle-hung d.c. motors geared with single-reduction spur gearing to the driving axles. They are force-ventilated by air from the turbine-driven vertical propeller-type fans through ducts built into the locomotive underframe. On the front end the fan is located in front of the coal bunker, and supplies air for the three traction motors mounted on the front bogie. The fan for the five motors on the rear bogie is mounted on the opposite side of the main turbine from the generator blower. All these fans have centrifugal type air cleaners which remove much of the dirt and cinders drawn in with the ventilating air.

Because this is a coal-burning locomotive, it was desirable to take special measures to provide the electrical equip-



The first of the three Chesapeake & Ohio Railway steam turbine-electric locomotives

ment with air free from smoke and steam. All air for the blowers, therefore, is taken into the locomotive ahead of the chimney. A bulkhead separates the blowers in the rear compartment, so recirculation of air is negligible. The electrical control equipment is separated by removable doors from the heated air discharged from the generators. This compartment is ventilated with outside air in summer, and with heated air in winter to prevent condensation. Since the ducts discharging the dirty air from the cleaners to the outside could not be made as short and straight

tion 1, but has little effect until the generator voltage increases. Further movement of the master controller increases the turbine speed to the full amount.

A meter panel at the engineman's position indicates traction motor current and turbine speed. These meters are lighted at night with ultra-violet light which eliminates all glare and affords maximum eye comfort for the engineman. A buzzer is provided to indicate wheel slipping; and there are lights to indicate tripping of overload relays, operation of earthing detector, functioning of blowers, and tem-

perature of the master controller.

One step of field shunting (Fig. 2) is provided by a non-inductive resistance connected across the motor fields by an electro-pneumatic switch. This switch is controlled by a voltage relay connected across the generator armature.

The slip relays are connected between the two traction motors supplied by one generator, the connection being made between the armature and the field in each case. As long as the back E.M.F., and

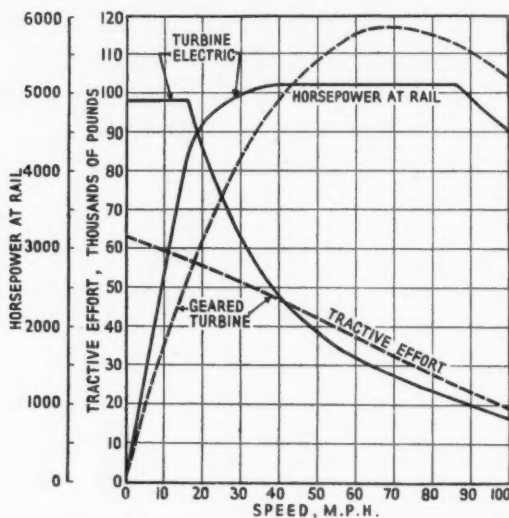


Fig. 1—Horsepower and tractive effort characteristics of steam-turbine locomotives rated at 6,000 h.p. and using identical boilers

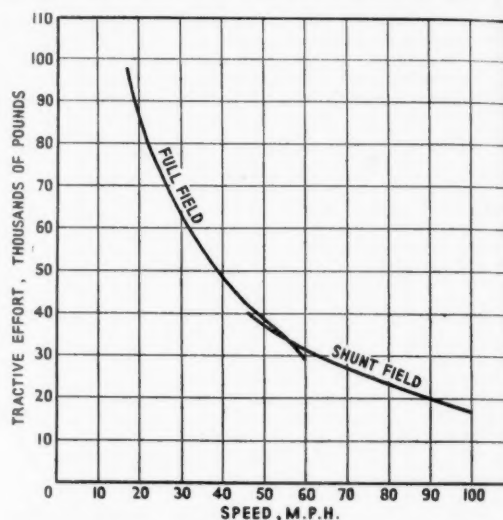


Fig. 2—Tractive effort and speed curves for different operating conditions as recorded with full throttle on the turbine

as was desirable, a high-pressure air-scavenging system is provided for occasional operation on each run.

Electrical Control

The electrical control differs from that used on diesel-electric locomotives in that part of the acceleration is obtained by varying the strength of the separately-excited fields of the main generators, and part by speed control of the turbine. To obtain a satisfactory water rate, the speed of the turbine is not reduced below 60 per cent. of the full speed in the idling position of the controller.

The control equipment for the main generators and the motors mounted on the rear bogie is in a compartment behind the generators. The control equipment for the motors on the front bogie is under the coal bunker.

The master controller, located at the engineman's position, has two handles, controlling speed and direction respectively. When the speed handle is moved from "off" to "idle," steam is admitted to the turbine, bringing it to the idling speed—about 3,600 r.p.m. This is the condition obtaining when the locomotive is stopped for short periods, as at stations. Moving the controller to the first speed position applies excitation to the generator fields and power to the traction motors, while movement successively through the additional positions increases the power step by step to the point at which maximum separate excitation has been applied to the generators, and the turbine speed is increased to 75 per cent. of full speed. The self-excited field is also connected to posi-

perature and pressure of lubricating oil.

The traction motors are connected to the generators by electro-pneumatic switches. The fields of the traction motors are con-

sequently the speeds of the two motors, are equal, no current passes through the relay. As soon as a wheel slips, the back (Continued on page 280)

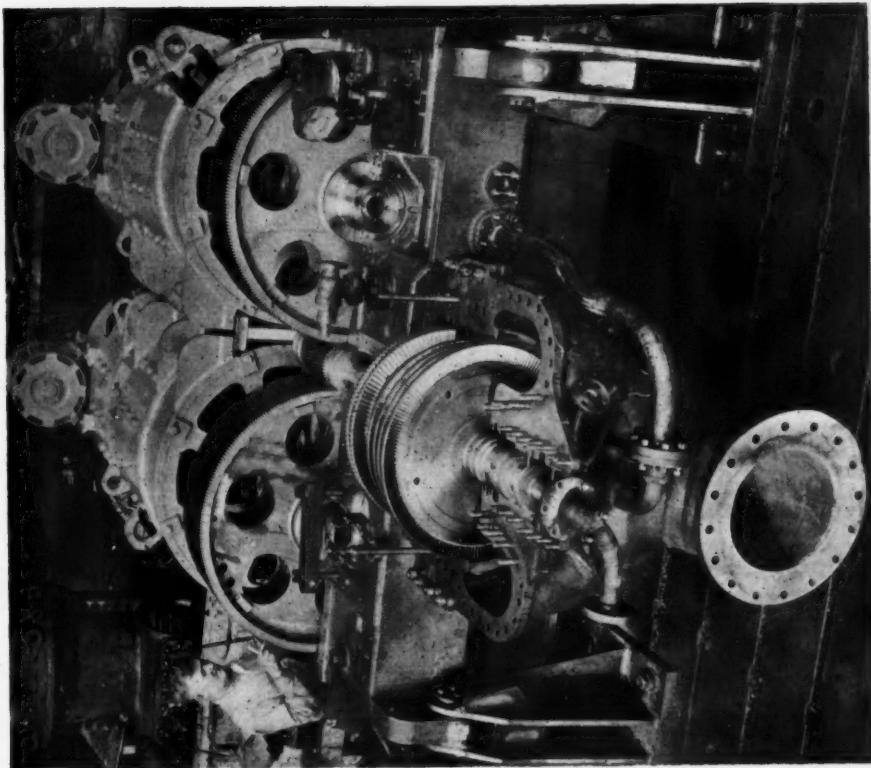


One of the eight 620 h.p. traction motors

Turbine-Electric Locomotive for the Chesapeake & Ohio Railway



Driver's position in cab. The coal space is ahead and the boiler is behind the driver



Power plant, viewed from above, with upper turbine and gear casings removed

First British Main-Line Diesel-Electric Locomotive in Service



Derby to St. Pancras train near Hendon, L.M.R., on February 23, the first day of No. 10000 in public traffic

Turbine-Electric Locomotives for the Chesapeake & Ohio Railway

(Concluded from page 278)

E.M.F. of its motor increases, which closes the relay contacts, thus operating the warning buzzer. It does not shut off or reduce power.

Overload relays in each motor circuit are set to trip at the maximum accelerating tractive effort. If any of these overload relays operate, the emergency trip magnet valve is de-energised and the governor closes immediately, thus relieving the overload. Before load can be re-established, the master controller must be moved to the "off" position.

The master controller contacts are connected to a panel having the twelve contactors mounted on the front, and the regulating resistors mounted on the rear.

Any generator armature and its associated traction motors can be disconnected should trouble occur in any of them. In that case, three-quarters of capacity is available. Copper strap, insulated with mica and glass, has been used for the main power-circuit wiring; cable is used only where flexibility demands it.

Two 9-kW. 75-volt generators supply auxiliary power, although either one alone has sufficient capacity to supply the maximum load. This results in increased reliability. A single regulator controls both generators, and they are paralleled through a balancing resistor. Either may be idle without in any way affecting the operation of the locomotive.

These auxiliary generators also supply power to the air brake system and to the mechanical lubricator pump. This pump is controlled also by the master controller, and is stopped when the locomotive is at rest, thus preventing waste of lubricating oil.

Having regard to the size of the locomotive, the control equipment is simple, while it also permits operation at any position of the controller for any desired length of time.

PRINCIPAL DESIGN DATA

Tractive force (continuous) ...	48,000 lb.
Speed at continuous tractive force ...	40 m.p.h.
Maximum starting tractive force (limited by traction motors) ...	98,000 lb.
Maximum speed (limited by traction motors) ...	100 m.p.h.
Driving wheels, dia. ...	3 ft. 4 in.
Total engine wheelbase ...	90 ft. 7 in.
Total engine and tender wheelbase ...	130 ft. 7 in.
Turbine output at 290 lb. per sq. in. gauge, 750° F., and 15 lb. per sq. in. back pressure ...	6,000 h.p.
Turbine speed ...	6,000 r.p.m.
Weight of electrical equipment, 151,845 lb. (67.4 tons)	
Weight of turbine-generator unit, 83,000 lb. (38.0 tons)	
Weight of traction motor ...	7,380 lb. (3.3 tons)
Weight of engine in working order, 750,000 lb. (324.7 tons)	
Weight of engine and tender in working order ...	1,194,800 lb. (411.5 tons)

EQUIPMENT

Turbine: One impulse type embodying a velocity-compounded impulse-control stage followed by four full-admission impulse stages.

Generators: Two, each double-armature; 1,760 amp. (continuous) per armature; 568 volts (continuous) per armature; 1,000 kW (continuous) per armature; 1,000 r.p.m.

Traction motors: 620 h.p. (continuous) at shaft; 880 amp; 568 volts; 720 r.p.m.

Auxiliary generators: Two, 9-kW; 75 volts; 120 amp.

Gearing: Main unit, pinion, 45 teeth, 6 dia. pitch; 9 deg. helical angle.

Main unit, gear, 272 teeth, 6 dia. pitch; 9 deg. helical angle.

Traction motors, pinion, 24 teeth, 2 dia.; pitch; 6-in. face spur.

Traction motors, gear, 55 teeth.

Blowers: Steam-turbine-driven propeller-type fans; generator blower, 24,000 cu. ft. per min.; No. 1 traction motor, 9,000 cu. ft. per min.; No. 2 traction motor, 15,000 cu. ft. per min.

Control: Manual, by change of governor setting and change of generator fields.

RAILWAY BENEVOLENT INSTITUTION.—The Board of the Railway Benevolent Institution desires to place on record its great appreciation of, and grateful and abiding thanks for, the benevolent support of the former railway companies, their directors, shareholders, officers and staff throughout the 90 years of the institution's work, during which the sum of £3,704,114 has been distributed to members of the staff of all grades needing assistance, and to their widows and dependants. The present cost of essential commodities makes it very difficult for old people to meet their obligations, and the Board of Management realises the urgent need for a continuance of the work of the institution, which has been carried on since 1858. It will, however, become increasingly difficult to maintain the income necessary to permit of a continuance in full of the 2,589 pensions at present being paid to aged railwaymen and their widows, and favourably to consider the many new applications for relief, for apart from the loss of assistance and contributions from the companies and their shareholders, there will be a diminution of £7,600 a year in interest from investments. It is estimated that the total expenditure incurred this year in relieving distress by means of annuities and grants and for the maintenance of the home for aged railwaymen and their wives and/or their widows will be £56,300, while the assured income from investments is about £39,500. The board confidently appeals to all railwaymen and women to support their own institution, and to redouble their efforts to raise funds for its maintenance. A collection is now being made in the name of the respective chief regional officers, and collecting books are in the hands of chief officers, through whom contributions should be remitted. An appeal is made also to all who use the railways.

Popularity of the "Enterprise" Express, G.N.R.(I)

Successful introduction of a non-stop express between Belfast and Dublin

ALTHOUGH the journey between Belfast and Dublin had been made non-stop by special trains on a number of occasions, the introduction of the "Enterprise" express in August, 1947, marked the first occasion that such a schedule was adopted for regular service. The "Enterprise" express was described and illustrated in our October 3, 1947, issue, and with its introduction into service, the G.N.R. (I.) felt that a long-standing want of the travelling public largely had been met.

A time of 2 hr. 15 min. is allowed for the distance of 112½ miles between Belfast and Dublin, and as the non-stop run has eliminated the Customs examination at Goragewood and Dundalk, examination of luggage is now carried out at the terminal stations. The "Enterprise" was also notable in that it was making the first daily non-stop run of more than 100 miles on an Irish railway, and the schedule is as follows:—

Up		Down
10.30 a.m.	Belfast (Great Victoria Street)...	7.45 p.m.
10.42 a.m.	Lisburn	7.35 p.m.
11. 0 a.m.	Portadown	7.15 p.m.
11.19 a.m.	Goragewood	6.57 p.m.
11.43 a.m.	Dundalk	6.31 p.m.
12.10 p.m.	Drogheda	6. 5 p.m.
12.45 p.m.	Dublin (Amiens Street) ...	5.30 p.m.

The marked success of the venture has been reflected in the expressions of appreciation by many of those using the

"Enterprise," as well as in the following analysis of passengers carried between August 11 and December 31, inclusive:—

Train	First class			Third class			Total		
	Number	Average per trip	User of seats provided Per cent.	Number	Average per trip	User of seats provided Per cent.	Number	Average per trip	User of seats provided Per cent.
10.30 a.m. from Belfast ...	6,739	55	77	18,322	150	75	25,061	205	76
5.30 p.m. from Dublin ...	6,480	53	74	19,230	157	79	25,710	211	77
Total (up and down trains)	13,219	54	76	37,552	154	77	50,771	208	76

The "Enterprise" express has seating capacity for 72 first and 200 third class passengers, and of the 50,771 passengers carried, 91 per cent. reserved seats, and the percentage for the two classes was 95 per cent. in the case of the first class, and 90 per cent. of the third class.

During this period the mileage operated was 27,450, representing 122 trips in each direction; the train does not run on Sundays or Christmas Day.

Notwithstanding that for a portion of the period, tourist traffic was at its peak, the average late arrival was 4.5 min., attributable almost entirely to temporary permanent-way slacks. The average speed of the train is some 50 m.p.h., although on certain portions of the track 70 to 80 m.p.h. is attained.

The standard formation of the train is seven bogie coaches with a total weight of

207 tons, and a departure from normal G.N.R. (I.) practice has been made in that second class accommodation is not provided.

A modern buffet car is included in the make-up of the train. Seating for 30 persons is available, and there is a bar at

which 20 individuals can be served. On the up journey, morning teas and coffees, as well as à la carte luncheons, are served, while on the return journey, passengers may have either dinner or supper, as they desire. During the period August 11 to December 31, 1947, the total number of meals served on this train amounted to 17,645.

The provision of separate toilets for ladies and gentlemen in each first class coach, with a full-length mirror for ladies, has proved very successful.

For seat reservation purposes a "theatre ticket" method has been adopted. Two books of fully-printed paper tickets are provided for each of the two daily runs. As only one numbered ticket is available for each seat, the possibility of "duplicated" booking, due to a clerical error, is eliminated.



The "Enterprise" express crossing the Craigmore Viaduct (Bessbrook), which has a maximum height of 137 ft.

MECHANICAL HANDLING ON RAILWAYS.—Mr. David Blee, member of the Railway Executive and formerly Chief Goods Manager of the Great Western Railway, is to read a paper on "Handling on the Railways" on Wednesday, July 14, at 3.30 p.m., at the convention which is to be held in conjunction with the Mechanical Handling Exhibition, Olympia, London, from July 12 to 21. Sir Eustace Missenden, Chairman of the Railway Executive, will preside. The full programme of the

convention will be announced later. The exhibition and convention, the first of their kind, are being held with the approval of the Government and the full support of leading associations in the industry.

GLOSSARY OF WELDING AND CUTTING TERMS.—The British Standards Institution has published B.S. 499: Part 2, Glossary of Welding and Cutting Terms. This additional part of B.S. 499 deals with surface

imperfections and internal defects in the weld or adjacent metal, which can be identified by radiographic means. There is a standard definition of each term, together with a description of the radiographic appearance. Where alternative terms are known they are grouped together, those given first being recommended for use, and the others being deprecated. Copies of this standard (price 2s. 6d.) can be obtained from the Sales Department, 24, Victoria Street, S.W.1.

Diesel Cargo Vessel for the Southern Region

The largest cargo vessel built for the former Southern Railway, which was delivered at the end of last year, is now engaged on the Channel Islands service



Dining saloon on m.v. "Winchester"

TOWARDS the end of 1947 there was delivered to the Southern Railway at Southampton the m.v. *Winchester* for carrying bulk cargoes on the Channel Islands service. This vessel, built on the Clyde by William Denny & Bros. Ltd., was the largest Southern Railway cargo ship to be placed in service, forming part of an extensive replacement programme.

The new vessel, three views of which accompany this article, has an overall length of 251 ft. 3 in. and a breadth of 37 ft. 8 in., while the gross tonnage is 1,149 and the loaded draught 12 ft 9½ in. There is one continuous main deck and an upper deck above extending from the bows to within about 80 ft. of the stern. There is also a boat deck amidships.

Cargo Space

Cargo space totals 51,500 cu. ft., and the vessel has a deadweight of 600 tons including bunker. Access to the cargo holds, which are situated forward and aft of the engine room, is through large hatchways each fitted with quick-opening steel hatch covers, arranged so that the holds can be

used with only one section of the covers off when required.

Special attention has been paid to the carriage of horses and cattle in addition to general cargo, and a total of 216 cattle can be taken. Forward loading of cattle is through shell gangway doors, and aft they are loaded by ramp or in special boxes. For loading and unloading a general cargo, shore cranes normally are used, but five-ton derricks and winches are fitted to each hold for use if needed.

There is comfortable accommodation on the lower deck amidships for 12 passengers in two-berth and single-berth cabins adjacent to the dining saloon. Nearby are bathrooms and toilets. Mechanical ventilation on the Thermotank system is provided for galleys and pantries and for all passenger and crew accommodation. Electric propeller fans are fitted in all the cargo space ventilators for use when cattle are carried. Heating and domestic hot water supply is by Crane boiler fitted with a fully automatic oil burner with thermostatic control.

The *Winchester* is driven by five-cylinder

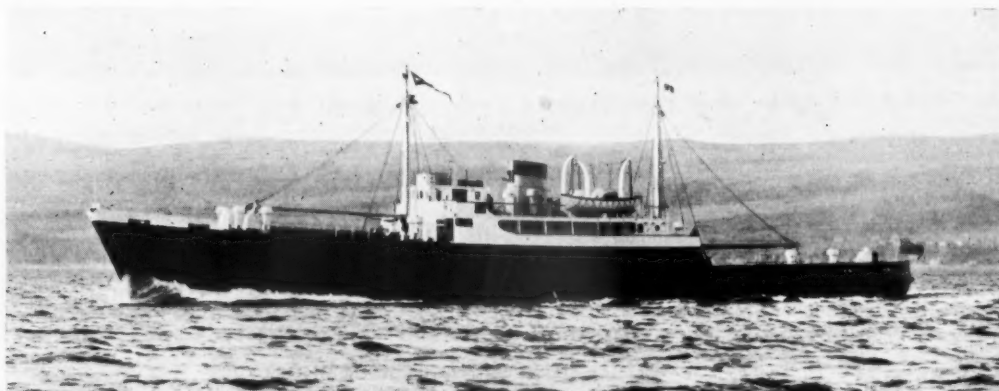
diesel engines of Sulzer design. These are of the enclosed trunk piston, airless-injection, port scavenging, direct-reversing, marine, two-stroke type of 480 mm. bore by 700 mm. stroke. They maintain a service speed of 15 knots at 225 revs. All the auxiliary machinery is electrically driven, this power being supplied by three diesel-driven generator sets, each having a capacity of 75 kW, 225 V. d.c. at 800 r.p.m. Both main and auxiliary engines use fresh water cooling, with a suitable sea water heat exchanger.

In each space used for the carriage of motor cars there is a CO₂ fire-smothering system in accordance with the most recent Ministry of Transport rules. Detection and warning equipment for fires has been fitted throughout the vessel. Wireless telephony is installed for ship-to-ship and ship-to-shore communication in the chart room, and this personal contact is maintained at all times.

PUBLIC TRANSPORT ASSOCIATION CONFERENCE.—The 1948 conference of the Public Transport Association is to be held at Eastbourne on May 4, 5, and 6. The annual general meeting of the Association, which represents operators of some 43,000 passenger road transport vehicles, will be held on the morning of May 5, followed by a paper and discussion.



Interior of a two-berth cabin on the "Winchester"



New diesel cargo vessel "Winchester" built for the Southern Region by William Denny & Bros. Ltd.

RAILWAY NEWS SECTION

PERSONAL

General Sir William Slim has received the Order of Knight of Grace of the Order of St. John of Jerusalem.

Sir Ronald W. Matthews, lately Chairman of the London & North Eastern Railway Company, has been elected President of the Society of Yorkshiremen in London and the Yorkshire Society for 1948, in succession to Lord Airedale.

Mr. R. L. D. Maunsell, Assistant Chief Mechanical Engineer, Sudan Railways, is retiring shortly after 21 years' service with that Administration.

Lt-Colonel Sir Alan Mount, Chief Inspecting Officer, Railways, Ministry of Transport, underwent an operation at St. George's Hospital on February 26, following a fall the previous day, in which he injured his arm. He is now making satisfactory progress.

Mr. John Alcock, Joint Managing Director Hunslet Engine Co. Ltd., has been appointed to the Board of Directors of W. G. Bagnall Limited.

In succession to the late Mr. G. R. Sharpley, Mr. Victor W. Bone, M.I.M.E., Managing Director of Ruston & Hornsby Limited, has been elected Chairman.

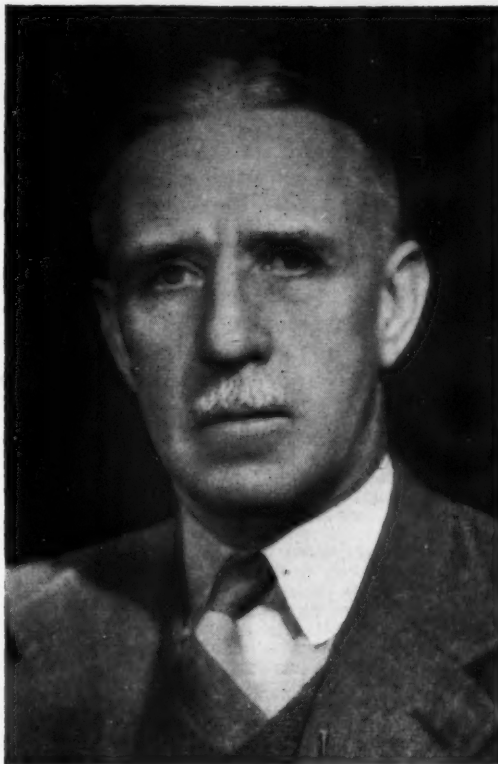
Mr. J. D. R. Tilney has been appointed a Director of the Liverpool Overhead Railway, to fill the vacancy caused by Mr. J. Shaw's retirement.

Lord Hawke and Major T. E. Baring, Directors of the Leopoldina Railway, and Mr. Ian Gilbert, the company's Secretary, left London airport for Uruguay on March 1, in connection with the acquisition of the railway by the Brazilian Government.

At the general meeting of the Institution of Mechanical Engineers on February 20, the President presented the prizes for the best papers for the year 1947. The George Stephenson Prize, accompanied by a bronze plaque, was presented to Mr. E. L. Diamond, M.Sc.(Eng.), A.M.I.Mech.E., A.M.Inst.C.E., M.I.Loco.E., for his paper on "The Development of Locomotive Power at Speed," an abstract of which was published in our issue of April 11, 1947 (p. 358).

Pending the appointment of a successor to Mr. A. Henderson, who recently accepted an invitation to become a full-time member of the Road Transport Executive of the British Transport Commission, the Rt. Hon. Alfred Barnes, Minister of Transport, has deputed Mr. S. W. Nelson, the Chairman of the Licensing Authority for Public Service Vehicles and the Licensing Authority for Goods Vehicles for the Northern Traffic Area, to act for the time being in a similar capacity for the Traffic Area for Scotland.

Mr. A. G. Hall, C.I.E., M.B.E., B.Sc., who, as recorded in our September 26 issue, has been appointed Director-General of Railways, Pakistan, was educated at Christ's Hospital and at the City & Guilds (Engineering) College, obtaining its diploma and the degree of Bachelor of Science in civil engineering, with honours, in 1914. After five years' war service, during which he attained the rank of Captain, he was appointed an Assistant



Mr. A. G. Hall

Appointed Director-General of Railways, Pakistan

Engineer on the North Western Railway, India, in 1920, and shortly afterwards was posted to the Khyber Railway Construction; and in recognition was awarded the M.B.E. in 1926. Mr. Hall's service has been confined to the N.W.R., except for two periods, one when he was in charge of one of the divisions of the Bombay-Sind Survey, and the other, of three years, when he worked as Government Inspector of Railways, Burma. After serving as Divisional Superintendent, Ferozepur and Karachi Divisions, N.W.R., respectively, Mr. Hall was appointed to officiate as General Manager of that railway in February, 1946, in which position he was subsequently confirmed permanently. His new post is comparable to that of Chief Commissioner of Railways, India. Mr. Hall was made a C.I.E. in the King's Birthday Honours, 1947. He was recently appointed an Officer (Brother) of the Order of St. John of Jerusalem. It is understood that he is taking leave, pending retirement in April.

Mr. G. F. Sinclair, C.B.E., A.M.I.Mech.E., M.I.E.E., M.Inst.T., who, as recorded in our December 19 issue, has been appointed to the newly-created post of Chief Technical Planning & Supplies Officer, London Transport, will be responsible to the Chairman for consideration of the technical aspects of all engineering projects remitted to him by the Chairman, and submission of reports and recommendations; submission of reports on the technical aspects of any matters as, at his discretion, he considers desirable; consideration of major and long-term proposals in connection with design construction, and maintenance of rolling stock and physical equipment of all kinds (reports and plans relating to these proposals will be submitted by the chief engineering officers to the Chief Technical Planning & Supplies Officer for consideration and report). Mr. Sinclair will also be responsible for controlling the purchase, custody and issue of supplies. Mr. Sinclair, who is 50, saw war service in 1916-18, and became General Manager of the Kilmarnock Engineering Company in 1926. He joined the L.C.C. Tramways as Assistant Rolling Stock Engineer in 1930, and was made Rolling Stock Engineer in 1932. In 1933 he became Rolling Stock Engineer (Tramways) to the L.P.T.B., and he held responsible engineering posts until his appointment as Chief Engineer (Trams & Trolleybuses) in 1940. His services were lent to the United Kingdom Commercial Corporation for special duties in the Middle East from 1940 to 1944, and he was made a C.B.E. for duties in the Middle East and was awarded the Order of the Patriotic War, First Class, by the Presidium of the Supreme Soviet in 1945. In October, 1945, he was appointed Deputy General Manager (Road Services), L.P.T.B., the position he vacates on his new appointment.

Mr. W. B. Shelton, who as recorded in our issue of January 30, has been appointed Divisional Operating Manager, Crewe, London Midland Region, joined the former L.N.W.R. in 1915. Early in 1917 he was commissioned in the Royal Flying Corps as an observer in kite balloons. After serving in Aden and Palestine, he returned to railway service in July, 1919, and in 1920 was appointed Runner to the District Superintendent, Manchester. At the end of 1921, he became Superintendent of the Line's Runner at Preston, and in 1925 was made Assistant District Controller, Heaton Norris. Four years later he was appointed Operating Assistant to the District Traffic Superintendent, Abergavenny. He became District Controller, Huddersfield, in 1931, and District Controller, Birmingham (New Street) in 1932. During 1938-39 Mr. Shelton served on a headquarters committee which inquired into district control organisation; he returned to Birmingham (New Street) in July, 1939, and in March, 1940, was appointed temporarily to the



Photo)

[Elliott & Fry

Mr. G. F. Sinclair

Appointed Chief Technical Planning & Supplies Officer, London Transport

position of District Controller, Willesden. He was appointed District Goods, Passenger & Docks Manager, Barrow, in 1944, and in 1946 became District Operating Manager, London (Western).

Mr. E. W. Belcher, who, as recorded in our January 30 issue, has been appointed Hotels & Catering Superintendent, Southern Region, was educated at St. Mark's School, Kensington, and later apprenticed at the Westminster Hotel and Restaurant School. He has held various positions in the hotels of the West End of London and the Provinces, at the County Hall, Westminster, and with Imperial Chemical Industries Limited. In January, 1939, he joined the War Department as a civilian expert in conjunction with the late Sir Isidore Salmon, and dealt with the catering for the Militia in July of that year and on general mobilisation at the outbreak of war. Commissioned as Major as from September, 1939, he assisted in

**Mr. W. B. Shelton**

Appointed Divisional Operating Manager, Crews, London Midland Region

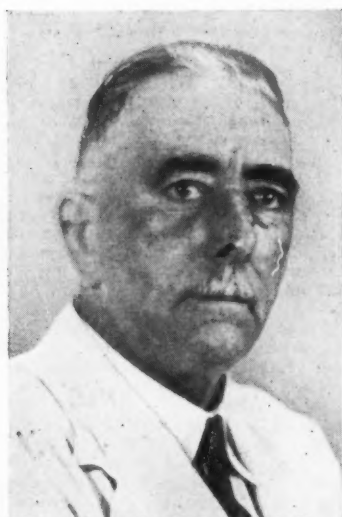
the formation of the Army Catering Corps. Mr. Belcher was made an M.B.E. in 1941, for services in connection with the feeding of 200,000 members of the B.E.F. evacuated from Dunkirk. He was released from the Army in December, 1941, to join the National Service Hostels Corporation, which was set up by the Minister of Labour for the purpose of housing and feeding war workers. Bevin boys, members of the Merchant Navy and war damage repair workers. In 1945 he was appointed Assistant to General Manager (Hotels & Catering), Southern Railway. Mr. Belcher is Vice-Chairman of the Committee of Management of Universal Cookery and Food Association and has been a member for over 13 years, and is Chief Examiner for City and Guilds of London Institute of Technology (Cookery). He is also a Freeman and Liveryman of the City of London.

Mr. James Hopwood, O.B.E., who has

**Mr. E. W. Belcher**

Appointed Hotels & Catering Superintendent, Southern Region

retired from the position of Chief Superintendent of Transportation, Rhodesia Railways, served with the Argentine Great Western Railway, from 1896 to 1902, before going to Rhodesia. His service with the Beira, Mashonaland, and Rhodesia Railways commenced with a period as clerk in the Traffic Superintendent's Office. After being Station Foreman at Gwelo, Mr. Hopwood held posts as Stationmaster there and elsewhere, before becoming, in 1918, Chief Clerk to the District Traffic Superintendent, Salisbury. He acted as District Superintendent on several occasions, and in 1922 was appointed Assistant Traffic Superintendent and acted as District Superintendent at Beira and Salisbury. In 1926 he became District Traffic Superintendent at Livingstone, and was transferred in 1931 to Broken Hill, when the district headquarters were moved. In 1932 he was transferred to headquarters at Bulawayo as Acting Operating Superintendent, and was confirmed in that position in 1934.

**Mr. J. Hopwood**

Chief Superintendent of Transportation, Rhodesia Railways, 1943-1947

**Mr. P. W. Dobson**

Appointed Chief Mechanical Engineer, Buenos Ayres Great Southern and Buenos Ayres Western Railways



Photo)

[Bassano

Mr. L. H. Short

Appointed Chief of Administration, English Electric Co. Ltd. Traction Department

Mr. Hopwood acted as Chief Superintendent of Transportation on several occasions, and was appointed to that position in 1943.

Mr. Percy W. Dobson, who, as recorded in our January 23 issue, has been appointed Chief Mechanical Engineer, Buenos Ayres Great Southern and Buenos Ayres Western Railways, served his apprenticeship with the Midland Railway, and continued his subsequent training with the Napier Motor Works, the Green Bus Company, and the Clerkenwell General Engineering Company. He joined the Buenos Ayres Western Railway in 1908, and subsequently was appointed Locomotive Superintendent of the Buenos Ayres Midland Railway (which position he still holds), and became Assistant Chief Mechanical Engineer of the Buenos Ayres Great Southern and Buenos Ayres Western Railways in 1939.

Mr. Leonard H. Short, M.C., M.I.E.E., M.Inst.T., has been appointed Chief of Administration of the Traction Department, English Electric Co. Ltd., to co-ordinate that company's interests in the fields of railway and road transport. Mr. Short, who is a Director of the English Electric Export & Trading Company and a Member of the Management Board of the parent company, was born in Northumberland in 1897, and educated at the Royal Grammar School, Newcastle-on-Tyne. He served in the 1914-18 war in the 7th Battalion Durham Light Infantry, and the R.F.C. and R.A.F. as a Captain and Flight Commander; he was awarded the M.C. After the war he obtained a first-class diploma at Faraday House, and in 1922 joined the English Electric Co. Ltd. as a pupil apprentice. He specialised early in the electrification of railways, and joined the railway section in London, in 1923. From 1927 to 1929, Mr. Short was Resident Engineer for his company's electrification contracts on the Great Indian Peninsula Railway, Bombay. After returning to England, he was appointed Deputy Manager and Chief Engineer Traction Department, and made extensive tours in the British Empire and foreign countries, dealing with the electrification of railway and road services. In 1940-41, he visited South America as a member of the Willingdon Mission reporting on electrical industry in the countries visited, and in 1942 he was a member of the Advisory Committee to the Ministry of Information, on South America. In 1943, Mr. Short visited Portugal and initiated the negotiations which have resulted in the extensive contracts for hydro-electric work, in which the English Electric Co. Ltd. and the Metropolitan-Vickers Electrical Co. Ltd. are jointly interested. In 1944, he was a member of the Advisory Committee to the Department of Overseas Trade on its procedure and practice.

Mr. G. E. Bellerose, General Manager, Express Freight, Canadian National Railways, has retired, and has been succeeded by Mr. F. N. Wiggins, who has 47 years' experience in express operation.

Mr. J. T. Moore has been appointed Chief Engineer, The English Electric Co. Ltd., in succession to Mr. A. D. Sloan, who retired at the end of 1947. Mr. Moore joined the English Electric Co. Ltd. in 1936 as Sales Manager of the Steam Turbine Department, Rugby, and in 1945 was appointed Manager of the Department, with his headquarters at the company's London office.

Reorganisation of Crown Agents' Engineering Departments

With effect from February 16, the former Designs, Contracts, and Engineering Inspection Departments of the Crown Agents for the Colonies have been grouped under an Engineer-in-Chief and are now designated: Civil Engineering Department, Mechanical Engineering Department, and Engineering Inspection Department.

Mr. W. L. Watson has been appointed Engineer-in-Chief of the three departments and will be succeeded on his retirement in a year's time by Mr. R. W. Foxlee. Mr. C. W. Richmond has been appointed Personal Assistant to the Engineer-in-Chief.

Civil Engineering Department

Chief Civil Engineer, Mr. R. W. Foxlee. Deputy Chief Civil Engineer and Officer in Charge of the Engineering Advisory Service, Mr. S. J. W. Gooch (to succeed Mr. Foxlee as Chief Civil Engineer on Mr. Foxlee's appointment as Engineer-in-Chief).

Deputy Chief Engineer, Civil Engineering & Equipment Materials Branch, Mr. E. A. McGill.

Deputy Chief Engineer, Civil Engineering Design Branch, Mr. B. Percival.

Mechanical Engineering Department

Chief Mechanical Engineer, Mr. A. Campbell.

Deputy Chief Mechanical Engineer & Officer in Charge of Electrical Branch, Mr. A. W. H. Keen.

Deputy Chief Engineers: Marine & Road Vehicles Branch, Mr. A. S. Milward; Machine Tool Industrial Plant & Materials Branch, Mr. W. D. Farrington; Locomotives & Rolling Stock Branch, Mr. A. C. H. Illston.

Engineering Inspection Department

Chief Inspecting Engineer, Mr. J. W. Norris; Deputy Chief Engineers, Messrs. D. C. Brown and S. I. White.

Miss Mariam Afzal has assumed office as Press Information Officer to the High Commissioner for Pakistan, in the United Kingdom.

The High Commissioner for Pakistan in the United Kingdom has accepted the resignation of Mr. S. M. Sayeedulla, Acting Information Officer, as from February 4, 1948.

It was notified in *The London Gazette* of February 17, under the heading of Regular Army: Royal Engineers, that War Substantive Captain J. E. Bradbeer relinquished his commission on February 18, and is granted the honorary rank of Captain.

We regret to learn of the death, in his 86th year, of the well-known American railway contractor and engineer, Mr. Charles H. Locher. Mr. Locher's construction experience began on the Norfolk & Western Railroad in 1877, and during the succeeding ten years he was employed on railroad construction in Virginia, West Virginia, Kentucky, and Pennsylvania. For twelve years he was a partner in C. R. Mason & Company, and was associated with the building of the Louisville Southern, Kentucky Union, and Norfolk & Western railroads. He invented an aerial ropeway dumping device and also the wagon-type drill for rock excavation. Later he was associated with Mr. Frederick L. Cranford, the New York underground contractor, and in the following four years the firm did construction work on that system amounting to over £3,000,000. In 1933 Mr. Locher became Construction Consultant to the Tennessee Valley

Authority, a post he held until his retirement in 1935. He was co-author of *Construction Planning and Plant*.

Mr. Stanley Edward Warner, A.M.Inst.T., whose photograph and biographical details appeared in our issue of October 24, 1947, on the occasion of his appointment as Acting Traffic Manager, Central Argentine Railway, has been confirmed in that post as from January 1, 1948.

Mr. E. M. Rice, M.I.C.E., Chief Engineer of the Rhodesia Railways for the past 13 years, is on leave before retirement in April. He joined the service at Umtali in 1922, and was commended for his work during the 1925-6 floods on the Beira section of the line; he has acted as General Manager on a number of occasions.

The services of Mr. P. R. Agarwal, Carriage Works Manager, Ajmer, Bombay, Baroda & Central India State Railway, have been placed at the disposal of the Jodhpur Railway for three years in the first instance, and he has been appointed Chief Mechanical Engineer, Jodhpur Railway.

We regret to record the death on February 29, of Mr. R. M. Barrington-Ward, D.S.O., M.C., on board the *Llangibby Castle*, at the age of 57. He was Editor of *The Times* from 1941, and had four brothers, namely, the late Mr. F. T. Barrington-Ward, K.C., the late Mr. J. G. Barrington-Ward, Student of Christ Church, Sir Lancelot Barrington-Ward, F.R.C.S., and Mr. V. M. Barrington-Ward, a Member of the Railway Executive, and previously Divisional General Manager, L.N.E.R.

Mr. J. P. Paton has been appointed Engineer-in-Chief, Buenos Ayres Great Southern and Buenos Ayres Western Railways, as from February 1, 1948, in succession to Mr. H. W. Stevens.

Mr. L. G. Axe, Manager of the British Thomson-Houston Co. Ltd. Transformer Sales Department, has relinquished this position on taking up an appointment with the British Thomson-Houston Export Co. Ltd. Mr. G. W. Edgley, Manager of the Leeds District, has become Manager of both the Transformer Sales and Mining Departments, and is succeeded as Manager of Leeds District by Mr. H. G. Harlow.

On January 21, The American Society of Civil Engineers opened its 95th annual meeting in New York, with Mr. Richard E. Dougherty, Vice-President for Improvement and Development, New York Central Railroad, its new President, in the chair. Mr. Dougherty, who graduated at Columbia University in 1901, and has been in the service of the N.Y.C.R.R. since 1902, has succeeded Mr. Edgar M. Hastings, Chief Engineer of the Richmond, Fredericksburg & Potomac Railroad, as President of the Society.

The Mond Nickel Fellowships Committee announces the award of two Fellowships for 1947. One is to Mr. L. H. Walker of Reynolds Tube Co. Ltd., to study the methods of application of Group Industrial Research, with special reference to the fabrication of light metals; the other is to Mr. D. R. G. Davies of Richard Thomas and Baldwins Limited, to study the application of statistical methods to plant metallurgical and management problems, with particular reference to the steel industry.

Ministry of Transport Accident Report

Polesworth, L.M.S.R.; July 21, 1947

Lt.-Colonel G. R. S. Wilson inquired into the accident which occurred at about 10.38 a.m. on July 21, 1947, near Polesworth Station, L.M.S.R. He was assisted by Brigadier C. A. Langley.

The 8.30 a.m. express, Euston to Liverpool, composed of 16 screw-coupled bogie vehicles, drawn by streamline 4-6-2 locomotive No. 6244, *King George VI* Class "7P," was travelling at 65 to 70 m.p.h. when it became derailed. The general circumstances of the accident are shown on the accompanying diagrams taken from the report.

The engine overturned just before coming to rest approximately 400 yd. beyond the point of derailment, but received only superficial damage. The two leading coaches also overturned and were wrecked. The ends of the following six were crushed together but not telescoped, and otherwise not seriously damaged. All couplings held and the vehicles retained fairly good line, considering the comprehensive nature of the derailment, and that only the two last kept the rails.

The train carried 800 passengers, 130 standing, and four were killed and one fatally injured. Nineteen were detained in hospital with serious injuries and a further 45, including six members of the dining car staff and a travelling carriage cleaner, sustained minor injuries or shock.

The accident was not in sight of any signal box, but an up express was stopped by the Polesworth signalman, who had become anxious about the train, and a freight on the down slow line was stopped by the prompt action of a fireman travelling in the last coach. The Polesworth and Tamworth stationmasters were informed and ample assistance was soon available. Valuable rescue work was performed by passengers, train crew, ambulance staffs and others. Considerable damage to tracks resulted, but the slow lines were again open by 7 p.m. the following day, all lines being available once more within 40 hr.

The weather had been fine and warm for several days.

The Track

For the first 10 miles from Rugby, where the train stopped, the line is level or slightly rising. For the next 20 miles past the site of the derailment the general trend is falling with local undulations; at the immediate approach to the site, the gradient rises at 1 in 888 for $\frac{1}{2}$ mile after falling at 1 in 439 and 1 in 321 for 3 miles. With the timings now in force, the usual speed of express passenger trains there is about 65 m.p.h. The left-handed curve has a radius of 72 ch. It lies in a sandy cutting and its length between tangent points is 675 yd.; it is preceded by a long right-handed curve of 225 ch. radius, with no intervening straight. The derailment was initiated as the right-hand leading bogie wheel began to mount the outside rail 376 yd. beyond the commencing tangent point.

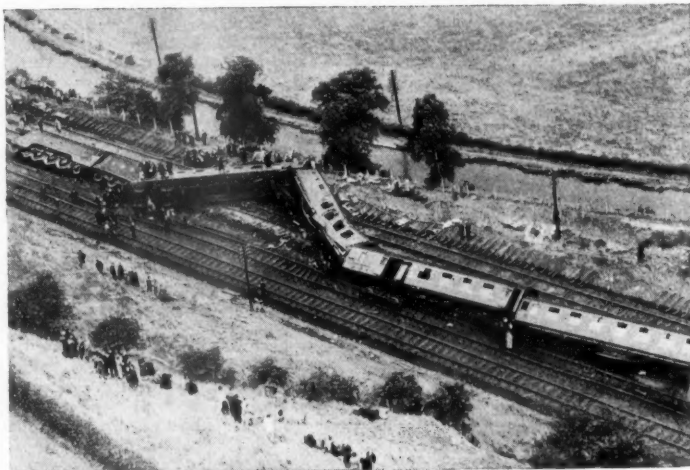
Permanent way was 95-lb. R.B.S., laid new in 1929 in replacement of 21-year-old track. Each 60-ft. rail length was supported by 24 sleepers; those on either side of the joints were of Douglas fir 8 ft. 6 in. by 12 in. by 6 in., with Baltic fir sleepers, 8 ft. 6 in. by 10 in. by 5 in. elsewhere. There were three coachscrews per chair, with hard wood ferrules in the chair holes, and the rail joints were held by standard four-hole fishplates; the keys were of hard wood. The 1929 track extended from 2,244 yd. in rear to 86 yd. ahead of the

point of derailment. Thenceforward for 542 yd. the sleepers had been renewed in 1942. The 588-yd. length, covering the whole of the 72-ch. curve up to and beyond the point of derailment, had been accepted for the 1948 renewal programme; the preceding 1,754 yd. of 1929 track, which lay on the very easy right-handed curve, had been proposed for renewal in 1949. The curve was last surveyed, realigned, and re-canted during the summer of 1937, when concrete monuments were put in. They provide for an entering transition of 177 yd., in which the cant is run up from zero at the tangent point to the designed figure of $4\frac{1}{2}$ in. for the circular curve; this represents a deficiency of $\frac{1}{8}$ in. on the theoretical or equilibrium cant for 75 m.p.h., the present permitted maximum. For 90 m.p.h., the pre-war maximum, the deficiency would have been $2\frac{1}{2}$ in.

Colonel Wilson examined the track on July 24, before any repairs had been carried out in rear of the point of derailment. The weight of the high rail at that point was 87.3 lb. per yd. and of the low 87.7 lb.; this was representative of the curve

ing of the gauge to a maximum of $\frac{1}{4}$ in. was of quite different character, and had occurred in five clearly defined waves, 60-70 ft. apart. The movement was evidently of very recent origin, and the inclination of the coachscrews and the lateral shift of the chairs showed that the high and low rails alternately had been forced from their correct gauge line. The diagram also shows the position of 11 sleepers on which the chairs had been refastened with fresh screw holes three weeks before the derailment, in order to correct slack gauge to the extent of $\frac{1}{4}$ in. As viewed in the line, there appeared to be little evidence of decay in the sleepers, but some were badly split and the chairs generally had cut into the timber by $\frac{1}{4}$ in. to $\frac{1}{2}$ in. A few of the coachscrews were loose and a number had evidently lost their hold and were beginning to work up. The original 18-year-old ferrules were in use and were broken and worn, though it is the normal practice to change them after 10 years.

Brigadier Langley examined about 50 sleepers taken out of the track. He confirmed their general soundness, including the seatings under the chairs, but found that in most the timber around the screw holes was bruised and soft, particularly in those taken from the last 90 yd. of track before the point of derailment. In the 11



View of the wreckage after the derailment

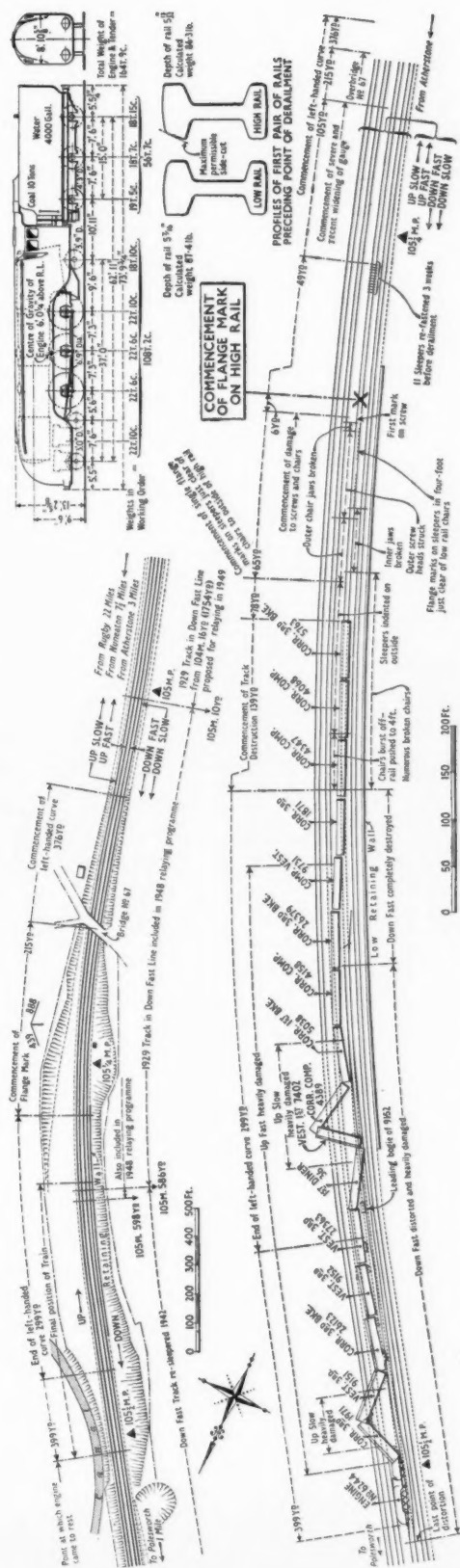
as a whole. The weights were thus well in excess of the permitted minimum of 79 lb., but on the high rail the permissible limit of side cutting had been reached or slightly exceeded on a considerable portion of the curve. The rails had been indented by the chair seats to a maximum of $\frac{1}{8}$ in. The actual gauge and cant for over 300 yd. in rear of point of derailment are shown to an exaggerated vertical scale on the diagram, based on measurements taken at every sleeper before any repairs had been carried out. From 300 yd. in rear to 220 yd., on the transition, there was a length of 20 yd. where the gauge was slack to a maximum of $\frac{1}{2}$ in. with nearly correct gauge on either side. For the next 115 yd., at the end of the transition and on the circular curve, there was varying slackness to a maximum of $\frac{1}{8}$ in., with a few tight places (max. $\frac{1}{4}$ in.). So far, the signs of progressive movement of the chairs on the sleepers were much as might be expected with track nearing the end of its life.

For the last 105 yd., however, the widen-

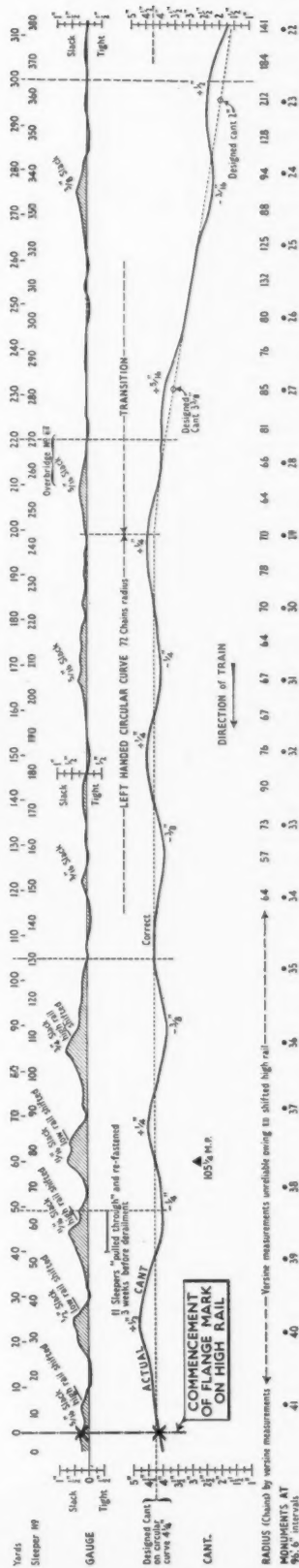
sleepers on which the chairs had been refastened, most, but not all, of the old holes had been plugged and some of the new bored rather close to the old; a few had become elongated by lateral pressure as the gauge was forced out. There was plenty of clean stone ballast and the formation appeared to be solid and well drained; it is not liable to subsidence, although there are collieries in the neighbourhood. The "top" was good and the voidmeter readings showed no serious depression of the sleepers under load.

The maintenance of the cross-level, however, on the transition and on the circular curve left a good deal to be desired, particularly as high and low cant alternated in comparatively regular waves. The diagram shows that slack gauge of $\frac{1}{4}$ in. and $\frac{1}{8}$ in. was related to a drop in cant, and in the last 105 yd., the fresh movement of the high and low rails from the gauge line, which has been described, corresponded with remarkable regularity to low and high cant respectively. The curve alignment in rear of the badly spread gauge

The Polesworth Accident, L.M.S.R.



The scene of the derailment (top left); weight distribution of the locomotive (top right), which was held to have had no influence on the accident; and the final positions of locomotive and rolling stock, with details of damage to track



Particulars of gauge and cant on the section where the derailment occurred

appeared regular to the eye, but versine measurements disclosed a variation in actual radius from 57 to 90 ch.; the minimum of 57 ch. occurred where the cant was low. The alignment on the transition curve was fairly satisfactory, as also was the record of a test run with a Hallade instrument 11 weeks before the derailment.

The Locomotive

Colonel Wilson could find nothing in the condition of the locomotive which could have led to the accident.

The Evidence

The driver had driven regularly between Liverpool and London during recent months, often with the same class of engine, and had never experienced any unusual movement on the curve. These engines were particularly steady in running and No. 6244 was in first class condition. All went well until just after bridge No. 67, when the engine began to roll alarmingly. He applied the brake lightly and, after rolling perhaps half a dozen times, the engine seemed to steady down momentarily, but it became completely derailed almost at once and he made a full brake application. He held on as it fell over and after ascertaining that the fireman was uninjured concerned himself with protecting opposing lines.

The fireman said the first roll flung him across the cab from right to left. He knew the road well and had never experienced bad riding on this curve. The previous fast train, the 6.50 a.m. from Euston, had passed at 9.50 a.m. and its enginemen had not felt any rough riding here.

It was explained to Colonel Wilson that L.M.S.R. practice was to put forward relaying proposals two years ahead. A proposal is initiated by the permanent way inspector concerned, based on age of rails, sleepers, fastenings, and so on, in relation to speed, traffic, and curvature. The District Engineer, after personal inspection, submits this to the Chief Engineer, who arranges for head office inspection before final acceptance for the relaying programme. If outside rails are badly cut but track is otherwise good, they are turned end for end in advance of relaying.

The Permanent Way Inspector had not put forward proposals in 1944 or 1945, but said his proposals for the next few years would be heavy. He had stated at the company's inquiry that he made every effort to get the last bit of life from the sleepers but he assured Colonel Wilson that he was referring simply to his ordinary duty in the interests of economical maintenance. He considered renewal strictly on the merit of each case and was not influenced by the present stringency in supply of new material.

The average weight of rails was given on the proposal form as 88 lb. with the general remark "rails light, sleepers showing signs of decay and indented." Although there was no mention of side cut, he said this was one of the factors he had taken into consideration. The whole material of the length generally was getting "fairly well worn out," sleepers and rails having been in since 1929. It should have lasted, however, with a good margin of safety for two more years. There was much less side wear on the preceding 1,754 yd. on the 225-ch. right-hand curve, so he had not proposed relaying before 1949.

He visited the length about once a month and on June 27 the ganger had drawn his attention to chair movements, slight inclination of coachscrews and nearly $\frac{1}{2}$ in. gauge widening near the 105½

milepost. He instructed the ganger to refasten these sleepers, as he considered more than $\frac{1}{4}$ -in. slackness inadmissible there, and 11 were dealt with, 53 to 43 yd. in rear of the point of derailment. A few others were refastened where gauge had slackened by $\frac{1}{8}$ in. He again inspected on July 10 and thought the track fit for 70 m.p.h. He was "amazed" at failure 11 days later, but added that the sleepers might not have been so good as they appeared and "once a thing starts to go, it goes very rapidly." He did not feel that any attention was required to the cant and thought the side cut rails would last without turning until relaying in 1948.

The ganger, of whose work the inspector spoke well, had been in charge for 3 years of the length gang of five men, including sub-ganger and himself. He was responsible for 1½ miles quadruple track, with no points and crossings. On Sunday morning, July 20, he examined and found nothing requiring attention on the down fast; and proceeded on holiday on the morning of the accident. He referred to continual trouble at this point and told his inspector in 1946 that this was the worst part of his length, though he had never felt the track to be unfit for prevailing speeds. It was not, however, as good as he would like to see it. He had done his best in the time available.

His gang had had to give a lot of attention to the alignment and level of the new flat-bottom track in the up fast when the ground thawed after the exceptional February-March weather, during which months he had been unable to do repair work. He had to refasten some down fast sleepers early in April, owing to gauge-spreading, but did not consider conditions bad enough to justify calling for extra assistance to regauge from 105½ to 105½ mileposts: "Everyone was shorthanded, we were all alike, and there was a lot of frost work to be dealt with."

Rechecking the gauge in May, he found it satisfactory save at the up end of his length, where he refastened a few sleepers. The next refastenings were about three weeks before the derailment, when he "pulled through" and refastened 11 sleepers where gauge had become wide to the maximum $\frac{1}{2}$ in. He remarked to others that if gauge went again it would be necessary to change some sleepers. He appreciated that the high rails were badly cut, but did not consider they required turning.

The sub-ganger confirmed this evidence. He would have noticed anything wrong with the gauge when he examined the down fast on the morning of the derailment, finishing 20 min. before the 6.50 a.m. out of Euston passed. He saw the derailed train approach.

The Chief Permanent Way Inspector, appointed from another area only 8 weeks before, saw the track for the first time that evening, and, with no first-hand knowledge of its history, was unable to suggest how it had got into such a condition that the fastenings failed. A few split sleepers should, he thought, have been changed, but he did not think the ganger would have been justified in recommending a speed restriction; he had maintained his length well.

The District Engineer and Permanent Way Inspector had noticed the side cutting during their inspection in November, 1946, but then it was not so pronounced, and the former had next seen it at the head office relaying inspection on July 15, 1947, when the Permanent Way Assistant to the Chief Engineer had accepted the length for the 1948 programme. The District Engineer said he would not undertake the turning

of rails unless they had reached the limit of wear by the side cutting gauge. In this case he considered that to be due and had the condition of rails and sleepers been brought to his notice he would have arranged for relaying at the first opportunity.

The Permanent Way Assistant informed Colonel Wilson that special consideration had been given to the effect of the enforced stoppage of maintenance during the prolonged frost, and instructions were issued to give priority to track repairs as soon as conditions permitted, emphasising that this was particularly necessary where track was nearing the end of its life. Special stress was laid on footplate riding as a means of examination and district engineers were given a free hand to impose local speed restrictions. Another instruction referred to possible need for such restrictions at short notice.

The Assistant was of opinion that the side cutting of the rails was a material factor, not only by facilitating the climbing of the flange but by virtually widening the gauge, thrust on fastenings being accentuated with the additional lateral axle freedom. As a general rule, rails should be turned when side cutting had progressed down to $\frac{1}{2}$ in. from the underside of the rail head. There are long standing instructions to that effect, but they have not been re-circulated for many years.

Inspecting Officer's Conclusion

The sole cause of the derailment was that the track was not fit for traffic of the prevailing speed and weight. The extent to which its margin of safety was decreasing had been misjudged seriously, in spite of warning signs. Eventually the holding power of the screw fastenings in the 18-year-old sleepers was insufficient for a heavy engine at moderately high speed, and they were unfairly stressed by the effect of the rail side cut, facilitating derailment of the leading bogie wheels. Each factor reacted on the other and the wave form of cant variations also contributed.

The gauge on the curve as a whole was deteriorating more than should have been accepted and there is little doubt that the train was responsible for the considerable movement of the chairs 105 yd. from the point of derailment, where gauge was widened to either side in alternations, corresponding closely to the alternations of cant, above and below designed value. These had not given rise previously to any serious rolling and not until the fastenings gave way was the full effect felt and the driver experienced the first alarming roll, after which interaction between the lurching of the engine and yielding of the fastenings became cumulative. The leading flange eventually met with more resistance where the gauge held and started to mount the side cut high rail.

Responsibility for continuing fitness of track rests at all times with the District Engineer, but it appeared that he was out of touch with the position, notwithstanding the two special reminders issued by the Chief Engineer in March, 1947, as he had not had the support to which he was entitled from the Permanent Way Inspector, who had not appreciated that side wear had been approaching danger point for some time, with the result that no action was taken to turn rails and such wear came to exceed the permissible limit.

There was also misjudgment of the strength of the fastenings, although gauge maintenance trouble should have provided ample warning. The Inspector who realised that, once begun, deterioration can progress rapidly, should have brought the

situation before the District Engineer before it was too late. Ordinary maintenance was clearly insufficient and by retaining the matter in his hands he was adding unnecessarily to his responsibilities.

The ganger also appears to have misjudged the position, but to have done his best, with the means at his disposal, to maintain gauge. The track was solidly packed with clean and tidy ballast. He had not, however, paid sufficient attention to cross-level, which added to difficulties with the gauge.

No responsibility rests on the Chief Permanent Way Inspector, recently come to the district, but Colonel Wilson is unable to accept his opinion that cant was satisfactory.

Remarks

The effects of the war did not contribute directly to this derailment, but present accumulated maintenance arrears cannot but have their psychological effect. Colonel Wilson feels that it becomes nearly impossible to resist the acceptance of a less perfect standard of maintenance. Close supervision and control assumes even greater importance and the Chief Engineer issued a reminder to all district engineers within a few days of the derailment, requiring them to carry out personal examination of main lines by fortnightly engine riding, with full discretion to impose speed restrictions where justified and unavoidable. Attention has been drawn also to the necessity of turning worn rails on curves, checking gauge and renewing ferrules. A separate instruction to the Crewe District initiated an immediate and regular programme of turning worn rails and drew special attention to arrears of re-ferruling. Though the necessity for them is to be regretted, such instructions should ensure close watch on the condition of the track and strengthen the hands of the district engineers.

A number of speed restrictions has been imposed already in the majority of cases where it has not been possible to adhere to a programmed relaying date. In his Annual Report for 1946, Sir Alan Mount, Chief Inspecting Officer of Railways, pointed out that operating efficiency will have to suffer increasingly from speed restrictions unless material supply can be improved in the near future.

Although actual cant gradient was nowhere in excess of the maximum generally permitted on the L.M.S.R. (1/720) where there is no change of curvature (as on a transition), the regular wave form of the variations was particularly objectionable and their contribution to the failure of weakened fastenings illustrates the need for special care in maintaining cross level of track that is becoming worn.

Side wear added to stress in the fastenings and there appeared to be confusion as to its permissible extent, i.e., whether it should be allowed to reach the full limit, as the District Engineer understood, or whether rails should be turned earlier when wear comes to $\frac{1}{4}$ in. of the under side of the rail-head, as the Permanent Way Assistant suggested. The Chief Engineer confirmed that the latter should be the practice on important lines and printed instructions to this effect, with diagrams, were put in hand for delivery to all concerned, down to the inspectors.

BRADSHAW'S RAILWAY GUIDE.—In view of increased costs of production, the price of Bradshaw's *Railway Guide* will be increased from 4s. to 5s., beginning with the April issue.

Staff and Labour Matters

Rates of Pay and Conditions of Service of Railway Staff

Discussions were proceeding throughout last week between representatives of the Railway Executive and of the National Union of Locomotives, the Associated Society of Locomotive Engineers & Firemen and the Railway Clerks' Association, on outstanding claims affecting the rates of pay of the railway salaried and conciliation staff.

A court of inquiry set up by the Ministry of Labour reported in June, last year, recommending a flat rate increase of 7s. 6d. per week for all sections of the staff, and a reduction in standard working hours. It also recommended that a comprehensive review should be made of the grading of railway workers, with the object of making a more accurate assessment of the relative values of the types of work performed, and also the re-arrangement of inter-grade margins, so that adequate incentive might be given for the acceptance of responsibility consequent on promotion.

The findings of the court of inquiry were accepted by the parties, and effect was given at the time to the recommendations for an increase of 7s. 6d. per week in wages and for the reduction in the standard working hours of railway staff.

Negotiations have since been proceeding, however, into the complex issues involved in the further recommendations of the court, and these negotiations culminated in last week's proceedings.

On Friday, February 27, it was announced that a settlement had been reached concerning the rates of pay of the salaried and conciliation grades, which it is understood will have effect from February 1, 1948. Details of the settlement are not yet available. The position of railway workshop staff remains for settlement, and it is understood negotiations will continue at an early date.

Parliamentary Notes

Argentine Railways

The Chancellor of the Exchequer (Sir Stafford Cripps), in the course of his speech in the House of Commons on February 23 on the Argentine Agreement, said that in that agreement the Government secured something which they were anxious to secure—the early payment of the moneys due under the arrangement made for the purchase of the British-owned Argentine railways. They were very anxious to conclude that deal as quickly as possible, because, while the railways remained suspended between heaven and earth, in the sense that they were neither Argentine nor British, it was extremely difficult to maintain them and to supply them with the spare parts and other things that were required. It was obviously desirable that that position should be brought to an end as quickly as possible.

The agreement was that, by March 1, the £150 million would be paid by the Argentine for the railways. To do that, it was necessary for the Argentine to have more sterling. They had not enough sterling in this country to pay for the railways, and also to continue their banking operations, a part of their banking being based on sterling—the "A" Account as it was called—which, since 1941, had had a gold guarantee clause attached to it. Therefore, it was necessary for some provision to be made, to put further quanti-

ties of sterling at the disposal of the Argentine Government. It was arranged that we would pay in advance for the whole of the foodstuffs and feedingstuffs which we had agreed to purchase for the 12 months ending March, 1949, to the extent of £110 million, with a provision that the receipts from the deliveries of these goods should be used to write off this sum of £110 million as they were delivered, and that if, at the end of the period, there was any sum still outstanding, that sum would be repaid to us by the Argentine Government.

After explaining the other provisions of the Agreement, Sir Stafford said that hitherto the Argentine Government had maintained two sterling accounts at the Bank of England, known as the "A" Account and the "B" Account. The "A" Account had been covered by a gold guarantee, and it had not been freely available for current transactions. It had been earning one-half of 1 per cent. interest, which interest was available for current transactions. The "B" Account consisted of the net sterling earnings since September 17, 1946, including any agreed releases from the "A" Account into the "B" Account. It was agreed that an amount of £5 million a year should be so released, together with the interest on the "A" Account balances, the half per cent. to which he had already referred. The sums in the "B" Account were not guaranteed, but were freely available for current transactions. They were earning interest at the current money-employed rates of the Bank of England. At the date of the present agreement, the "A" Account held rather over £100 million, and the "B" Account a sum of about one-third of that.

Under the present agreement the Ministry of Food would pay in advance to the Argentine Government £100 million in respect of food and feedingstuffs purchased in 1948 and 1949, together with a single cash payment of £10 million in respect of increased Argentine production costs. That sum would be credited to the Argentine Government's "B" Account at the Bank of England, which would then be increased to somewhere rather short of £150 million. The Argentine would forthwith pay the railway companies the purchase price of £150 million, by clearing the "B" Account entirely, and supplementing that with whatever was necessary from the "A" Account, depending on exactly how the accounts stood on the day on which the transaction passed. The "B" Account, though emptied by this operation, would nevertheless be maintained as an account to receive subsequent sterling earnings on current account, so that both the "A" and "B" Accounts would continue to exist under these new conditions.

Questions in Parliament

Colonial Inland Transport Adviser

Mr. A. Edward Davies (Burslem—Lab.) on February 25 asked the Secretary of State for the Colonies on what date an adviser on colonial inland transport was appointed to succeed Mr. C. E. Rooke, C.M.G., who had resigned.

Lt.-Colonel D. R. Rees-Williams (Parliamentary Under Secretary of State for the Colonies): On January 1 last.

Mr. Davies: May we know who is the gentleman?

Lt.-Colonel Rees-Williams: Mr. A. J. F. Bunning, formerly General Manager of the Nigerian Railway.

Notes and News

Privately-Owned Railway Wagons.—The Minister of Transport has issued the following Order:—Requisitioning of New Privately-Owned Railway Wagons Notice, 1947.

Civil Engineering Assistants Required.—Civil engineering assistants are required by the Crown Agents for the Colonies for the civil engineering department at their London office. See Official Notices on page 291.

Vacancies in South America.—An assistant chief engineer, sectional engineers, and chief draughtsman for resident engineer's department, are required by a British railway company operating in Chile and Bolivia. See Official Notices on page 291.

Repayment of Mexican Rail Bonds.—Reuters quotes a report from New York to the effect that Mexico plans to resume payments on foreign-held railway bonds in April. This action would bring Mexico up to date in payments on all foreign-held obligations.

G.W.R. Operatic Society.—Last week the G.W.R. (London) Operatic Society gave three performances of "The Desert Song" at the Scala Theatre, London. This was, in terms of annual shows, the coming of age of the Society, an event which had been postponed for seven years by the incidents of the war. The play was well presented and performed, and appreciatively received by large audiences.

Minister's Statement on Belfast & County Down Acquisition.—After the annual meeting of the Belfast & County Down Railway Company on February 26, at which the proposal to sell the railway to the Northern Ireland Road Transport Board (see our January 23 issue) was strongly criticised, the Northern Ireland Minister for Commerce issued a statement placing the facts of the situation on record. He recalled that the price was fixed after expert investigations, and with reference to Stock Exchange values and

the terms accorded to railway shareholders in Great Britain by the Transport Act. Far from shareholders being kept in the dark, as had been alleged, the Minister insisted on immediate publication of the terms; but both he and the directors had been advised by counsel that the company had no powers of effective consultation with the stockholders before legislation was passed. There was no substance in the suggestion that the directors had negotiated under the threat of acquisition at any terms the Government thought fit to propose, by virtue of powers under the Northern Ireland Act, 1947, for the Government had derived no such powers from that Act.

New London Transport Escalators.—A second 117-ft. escalator has just been opened at Wanstead Underground Station (Central Line). A third escalator is now being installed at Gants Hill (Central Line) and will be in public service at the end of this month.

Visit to Durnsford Road Power Station.—The Durnsford Road power station, near Wimbledon, was visited by the Southern Region Lecture & Debating Society, on February 25, when two parties inspected the boiler house, engine room, and the control room. The power station, which was built by the L.S.W.R. and supplies the Western suburban section of the Southern Region, was referred to in our summary of Mr. C. M. Cock's paper to the Institution of Electrical Engineers, in our November 7, 1947, issue.

Engineering Work in Polhill Tunnel, Southern Region.—The work in Polhill Tunnel, scheduled to begin on February 22 as reported in our February 20 issue, was postponed until February 29 owing to weather conditions. Many of the men booked to do the tunnel repair work in the preceding week had to be employed during the week-end keeping points clear of snow. This fact, together with the possibility of snowdrifts rendering inoperative the alternative rail and bus routes arranged, made it necessary to defer the work.

Southern Region Locomotive Naming Ceremony



Unveiling the nameplate of the "Battle of Britain" class locomotive, "Biggin Hill," at Waterloo, on February 24. Left to right: Mr. John Elliot, Chief Regional Officer, Southern Region; Sir Archibald Sinclair; and S/Ldr. G. D. Sise, Station Commander, R.A.F. Station, Biggin Hill

British Standards for Cement.—The British Standards Institution has published B.S. 12:1947, Portland Cement (Ordinary and rapid-hardening), B.S. 146:1947, Portland-Blastfurnace Cement (not exceeding 65 per cent. blastfurnace slag), and B.S. 915:1947, High Alumina Cement. New editions of these standards specify the composition of the various cements, sampling procedures, and tests of the following properties: fineness, chemical composition, strength, setting time and soundness. Copies may be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, S.W.1, price 3s. 6d., post free.

British Batteries Ordered by Siam.—Britannia Batteries Limited, Redditch, has secured against considerable foreign competition an order from Siam for seven Alkalum steel-alkaline batteries for Royal State Railways of Siam diesel-electric locomotives. Each battery comprises 90 cells of 270 amp. hr. capacity, and they are to be fitted to diesel locomotives originally built in this country, which are now being refitted following the Japanese occupation of Siam.

Transport Officers' Reunion.—A reunion of officers who served on Transportation H.Q. staff or in transport units in North Africa or the Mediterranean has been sponsored by Brigadier R. D. Waghorn, C.B.E., and Brigadier R. F. O'D. Gage, M.C., Director of Transportation, War Office. The gathering will be held at the Connaught Rooms, Great Queen Street (off Kingsway), London, W.C.2, at 7 p.m., on Friday, March 19. Tickets (12s. 6d.) are obtainable from Mr. K. L. Prosser, 4, Orsett Terrace, London, W.2. Lounge suits will be worn.

James Booth & Co. Ltd.—The balance from trading account after providing for taxation for the year ended December 31, 1947, was £130,684. After meeting depreciation, taxation, and directors' fees, the net surplus for the year was £128,991, to which £224,395 brought in from the previous year is added. After payment of the dividend on the preference shares, the available balance is £347,226, out of which the directors recommend a dividend of 20 per cent. on the ordinary shares for the year, less income tax; provision of £5,000 for staff fund account; and a carry-forward of £259,726.

Hale & Hale (Tipton) Limited.—The report for the year ended August 4, 1947, shows a trading profit of £25,234. After meeting directors' fees and depreciation, the net profit was £18,902. The directors recommend a final ordinary dividend of 15 per cent., less tax, making a total of 20 per cent., less tax, for the year; and the transfer of £5,000 to general reserve account. This leaves a carry-forward of £13,936, comparing with £14,059 brought in. In a statement accompanying the report, the Chairman, Mr. W. Edgar Hale, records that the company's order book is still heavily loaded, and that in some sections there are approximately two years' work in hand.

£7,500 Waste Paper Contest.—A waste paper salvage competition, with prizes of £7,500 to be won by local authorities, has been launched by the Waste Paper Recovery Association with the object of restoring salvage to its wartime level. As in previous contests held during the war, prizes will be awarded to borough, urban and rural councils showing the greatest percentage of increased tonnage over last

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he or she is excepted from the provisions of the Control of Employment Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

Tyne Improvement Commission

CIVIL ENGINEERING ASSISTANTS

THE Tyne Improvement Commission invite applications for two Civil Engineering Assistants, preferably, though not necessarily, with Dock and Harbour experience. The salary in the case of the first of these two appointments will be £405 per annum, rising by annual increments of £15 and £20 to £440 per annum, plus war bonus, and in the case of the second will be £375 per annum, rising to £390 per annum, plus war bonus. (War bonus for both these scales of salaries is at present £65 per annum.) The successful candidates will be required to pass a medical examination and the appointments will be subject to the provisions of the Commissioners' superannuation scheme.

Applications stating age, education, training and experience, together with copies of testimonials, should be addressed so as to reach the undersigned not later than April 1, 1948.

J. K. McKENDRICK,
Secretary

Bewick Street,
Newcastle-upon-Tyne, 1.
February 17, 1948.

ENGINEERING ASSISTANTS—CIVIL—required by the Crown Agents for the Colonies for the Civil Engineering Department at their London Office. Salary scale £475-£25-£750. The £475 minimum is linked to entry age at 25, with the addition of £25 for each year above that age up to £600 and subtraction of £25 for each year below 25. Commencing salary fixed according to qualifications, experience and age. Extra duty allowance of 8 per cent. of annual salary also payable. There is an Office Gratuities Scheme, providing superannuation benefits.

Qualifications. If candidates have not qualified as members of either the Institution of Civil Engineers or the Institution of Structural Engineers, they must have passed the Associate Membership examination of either of these Institutions or hold exempting degree. They must be first class draughtsmen and have had experience in a Civil Engineer's Railway Company's or Structural Firm's drawing office. They must be capable of preparing detailed designs of bridges and building in steel; experience also in reinforced concrete design would be an advantage. Some experience in the field or on works is desirable.

Duties. Calculations, designs and specifications of steel and reinforced concrete structures, including bridges, buildings and general civil engineering design work. May be required to undertake short tours in the Colonies on field or survey work.

Write stating age and full particulars of qualifications and experience to Box 3284, c/o WHITES LIMITED, 72, Fleet Street, London, E.C.4, quoting 0/154. Applications must not be made to the Crown Agents direct.

BRITISH Railway Company, operating Chile and Bolivia, requires:—

Assistant Chief Engineer.—Qualifications—Chartered Civil Engineer, good experience in track maintenance, construction and bridging, held Railway administrative or supervisory post. Salary £1,000 rising to £1,300 p.a.

Sectional Engineers.—Experienced in track maintenance and construction of Railways and Structures. Salary £750 rising to £950 p.a.

Chief Draughtsman for Resident Engineer's Department.—Railway experience essential. Salary £750 rising to £950 p.a.

Free quarters, allowances, passages, etc., provided.

Write with full details of qualifications and experience to Box 2120, c/o CHARLES BARKER & SONS LTD., 31, Budge Row, London, E.C.4.

BADLY wanted to complete files: *Railway Gazettes* dated 1940, March 29, July 26, September 27; 1941, March 14, July 25; 1942, June 19. Index to Volume 74. *Diesel Traction Supplement* Nos. 99, 100, 101, 102, 103, 128, 147. Offers, stating condition of copies and price including postage to: JAMES STEFFENSEN, Ehlersvej 8, Hellerup, Denmark.

RAILWAY SIGNALLING AND COMMUNICATIONS, INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linemen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth, 8s. By post 8s. 6d.

year's waste paper collections, during the three months period from March 1 to May 31. In each of these divisions awards will range from a first prize of £1,000 to a seventh prize of £50. The money is to be used for the general benefit of the community. In view of the dollar shortage, the association considers that the country must produce 100,000 additional tons of salvage before July if further cuts in newspaper, packaging, and other essentials are to be avoided. Entries must reach the association at 52, Mount Street, London, W.1, before March 15.

Train Mined in Palestine.—Three electrically-detonated mines were exploded under a Cairo to Haifa train when it was a short distance north of Rehovoth Station on February 29. The three coaches wrecked were part of a four-coach military portion attached to the train. Twenty-eight British soldiers were killed and 35 injured. A fourth mine which had been placed on the track did not explode.

Leopoldina Railway Sale Negotiations.—Representatives of the Leopoldina Railway Co. Ltd. left this country by air for Rio de Janeiro on March 1 to hold conversations with the Brazilian Government regarding the purchase of the system. They were Lord Hawke and Major T. E. Baring (directors), and Mr. Ian Gilbert, secretary of the company. It has been confirmed in London that the Brazilian Government intends to buy the railway, which has an issued capital of £9,716,300. The purchase proposals were reported in our February 27 issue. A strike on the railway which began at midnight on February 22-23 (see our February 27 issue) ended on March 1.

Railway Strike in Queensland.—A state of emergency was proclaimed in Queensland on February 27, arising out of the strike of railway workshops staff which began on February 6 (see our February 13 issue). The Government announced that men who did not return to work on Monday morning, March 1, would be regarded as having ended their service. On Sunday night the Premier of Queensland, Mr. E. Hanlon, broadcast an appeal to the men to return to work. Unions controlling 5,000 out of the 14,000 men immediately affected ordered a resumption of duty. As a result of the strike, practically all railway services in the State have been

withdrawn, rendering 19,000 men idle. The strikers decided on February 26 to defy an order of the Industrial Court instructing them to resume work on March 1. On March 2, however, the men returned to work.

British Railways Canadian Office.—The office of British Railways in Canada which opened on March 1 is at Toronto, as stated in the text of the paragraph on page 262 of last week's issue, and not at Montreal, as shown incorrectly in the heading.

London Transport Wages Agreement.—On February 27 a delegate conference of London bus and tramway workers accepted a wage increase offer made by the London Transport Executive (see our February 27 issue). The increase, which affects nearly 56,000 employees, amounts to 7s. 6d. a week, and the payment of time-and-a-half for Sundays for adult grades of traffic and maintenance staff.

San Paulo Railway Purchase.—A Reuters message from Rio de Janeiro reports that payment for the San Paulo Railway "in the near future" is understood to have been a point settled in principle in the talks between the British Financial Mission and the Brazilian Delegation. Although no official statements have been made by either side regarding the progress of the negotiations in general, a Brazilian representative has stated that the talks are proceeding "in an atmosphere of mutual understanding and cordiality." On the question of British utilities, however, informed sources maintain greater reserve.

British Railways in Argentina Taken Over.—President Peron of Argentina was prevented by illness from attending the ceremony at Retiro Station, Buenos Aires, on March 1, when the British-owned railways were formally handed over to Argentina. A message was broadcast during the ceremony by Señora de Peron from the President's bedside. A crowd, estimated at 500,000, assembled at the station. All traffic stood still for 5 min. and ships in the harbour sounded their sirens. The signal for the standstill of railway traffic was given by a blast on the whistle from the first locomotive in Argentina, *La Portena*, which was brought to the country in 1857. The whistle was sounded by a former driver, now 83 years old, who drove the engine for many years.

Uruguay Railway Purchase Agreement.—After negotiations in Montevideo regarding the purchase of the British-owned railway companies, an agreement was reached on March 1 that they should be sold to the Uruguay Government for £7,150,000. The discussions were reported in our February 27 issue. The railways concerned are the Central Uruguay Railway Co. of Monte Video Ltd., the Midland Uruguay Railway Co. Ltd., and the North Western and Northern Railways which are jointly operated with it. The transfer will take place on July 1.

Water Buses for the Thames.—A service of diesel-engine motor launches will provide a passenger service on the Thames between Putney and Tower Bridge as from June 1. Intermediate calls will be made at Albert Bridge, Lambeth Bridge, and Charing Cross. The launches will have cabin accommodation for about 150 passengers, and will run at 30-min. intervals daily from 8 a.m. to 8 p.m.

Lorry in Crossing Accident near Peterborough.—A lorry conveying German prisoners-of-war to work on a farm was in collision with a light engine at a level crossing at Connington, near Peterborough, during a thick fog on March 1. Three of the prisoners were killed outright and three more died in hospital. Five others were injured.

Staff Representatives Meet London Transport Executive.—Representatives of the staff side of four groups of London Transport engineering staff met Lord Latham and other members of the Executive at a tea reception held at 55, Broadway, S.W.1, last week. The groups were: London Transport Joint Trades Committee; Joint Committee of Unions for Railway Workshop Staff; Electrical Engineering (Generation & Distribution) local committees; and the Shop Stewards Committee (Greenwich). The meeting was the first of its kind and will be followed by others. Lord Latham, in discussing the future, said the staff would, in the new situation of national ownership, be increasingly interested in creating the best possible service for the public. The management of London Transport, for its part, would continue to concern itself with the wellbeing of the staff.

Forthcoming Meetings

- March 5 (Fri.).—The Institute of Transport, Western Section, Bristol, at the offices of the Port of Bristol Authority, at 12.45 for 1 p.m. "Railway zonal collection and delivery services," by Mr. D. Blee, M.Inst.T.
- March 8 (Mon.).—The Institute of Transport, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. "The development of road passenger transport services," by Mr. D. M. Sinclair, M.Inst.T.
- March 10 (Wed.).—Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2, at 2.30 p.m. "The Trade and Technical Press," by Mr. Roland E. Dangerfield.
- March 10 (Wed.).—The Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 5.30 p.m. "The Development of L.N.E. Carriage and Wagon Design, 1923-1941," by Mr. N. Newsome, Associate Member.
- March 10 (Wed.).—The Engineers' Guild, at Caxton Hall, Caxton Street, London, S.W.1, at 6 p.m. Discussion: "The Guild as an Association of Professional Engineers"; Chairman, Sir Peirson Frank, supported by Mr. O. V. Bulleid, Dr. P. Dunsheath, and Mr. A. S. Quartermaine.
- March 13 (Sat.).—The Permanent Way Institution, Manchester & Liverpool Section, at St. John Ambulance Brigade Headquarters, Chapel Walks, Preston, at 2.30 p.m. Lantern lecture, "How the Forth Bridge was Built, and Why," by Mr. A. Ellis, of Blackburn.

Railway Stock Market

Foreign railway stocks have been the liveliest feature of stock markets, Brazilian and Uruguayan rails showing spectacular movements on the latest "take-over" developments. The market is assuming that with the departure of the Leopoldina representatives to Rio de Janeiro, final arrangements for acquisition of the line by the Brazilian Government cannot be far ahead. After earlier gains Leopoldina ordinary stock eased slightly to 18, but the 5½ per cent. preference was firm at 57½ and the 4 per cent. debentures strong at 78. Leopoldina Terminal £1 ordinary rose to 4s. and the 5 per cent. debentures to 74, the latter being guaranteed by the Leopoldina company. San Paulo improved to 167 on the view that at long last Brazil must pay over the agreed sum for the railway. Great Western of Brazil also have been active on the possibility of take-over developments, the £10 ordinary changing hands at 80s, with the preferred also at this level, and both classes of debentures around 78.

In contrast, however, Uruguay rails came back after earlier gains, the purchase price of £7,150,000 fixed by the Uruguay Government being below recent market estimates, which had ranged over £8,000,000. Central Uruguay ordinary reacted £6 to 22, and the second debentures £4 to 77, while Midland Uruguay debentures fell £5 to 58 and Uruguay Northern debentures reacted a similar amount to 48.

Argentine rails approximated closer to pay-out levels now the £150,000,000 purchase money has been handed over and the announcement of the debenture repayment dates has been made. The 4 per cent. debentures of the leading companies were all marked up further to 97½. In other directions there have been numerous deal-

ings around 31 in Guayaquil & Quito 5 per cent. debentures. Chilean Northern debentures marked 26, while Manila 5 per cent. preference were dealt in around 8s. 9d. There was also more activity in United of Havana stocks, particularly in the 1906 debentures, which gained a point to 17½. In other directions, Antofagasta ordinary and preference were better at 11½ and 61 respectively. Canadian Pacific eased to 18½. Beira Railway bearer shares have been steadier at 51s. 3d.

British Transport stock (1978-88) receded ½ to 98, partly owing to the view, now gaining ground, that British Electricity stock may have to be made shorter-dated than Transport stock. In contrast other British Funds moved higher in anticipation of reinvestment arising from repayment of the £300,000,000 of 3 per cent. conversion loan. Iron and steel shares participated in the better tendency, Dorman Long, United Steel, Colvilles, and Stewarts and Lloyds all improving a few pence.

There was also a better trend in shares of locomotive building and engineering companies, partly on wider realisation of the scope for expansion in export business. Vulcan Foundry changed hands up to 28s. 3d., Beyer Peacock up to 24s. 3d., and North British Locomotive around 25s. 3d., while Wagon Repairs 5s. shares were dealt in up to 21s. 6d., and Charles Roberts at £6½. In other directions, T. W. Ward kept under the influence of the higher interim dividend and were active over 60s. Bus and road transport shares were again prominent, but after further gains those of the operating companies encountered a little profit-taking, and among stocks of the big controlling groups, B.E.T. fluctuated. Tillings failed to keep best levels, but were firm, a statement regarding compensation for assets acquired by the British Transport Commission being expected shortly.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week		No. of Week	Aggregate traffic to date			Shares or Stock.	Prices		
				Total this year	Inc. or dec. compared with 1945/46		Totals		Increase or decrease		Highest 1947	Lowest 1947	March 2, 1948
							1947/8	1946/7					
South & Central America	Antofagasta ...	834	22.2.48	£ 58,450	+ 27,550	8	£ 401,410	£ 279,790	+ £ 121,620	Ord. Stk.	17	9½	12
	Arg. N.E. ...	753	21.2.48	ps. 369,500	+ ps. 46,700	34	ps. 11,871,600	ps. 10,718,700	+ ps. 1,152,900	"	21	10	12
	Bolivar ...	174	Jan., 1948	898,547	- 816,522	5	898,547	\$16,522	-	6 p.c. Deb.	25	16½	27½
	Brazil ...	...	...	...	...	...	...	...	...	Bonds	44½	26	44½
	B.A. Pacific ...	2,771	7.2.48	ps. 3,250,000	+ ps. 550,000	32	ps. 84,791,000	ps. 72,092,000	+ ps. 12,699,000	Ord. Stk.	11½	6	12
	B.A.G.S. ...	5,080	21.2.48	ps. 4,592,000	+ ps. 326,000	34	ps. 126,328,000	ps. 121,083,000	+ ps. 5,245,000	Ord. Stk.	19	12	19
	B.A. Western ...	1,924	21.2.48	ps. 1,763,000	+ ps. 306,000	34	ps. 48,940,000	ps. 43,822,000	+ ps. 5,118,000	"	28½	14½	24½
	Cent. Argentine ...	3,700	21.2.48	ps. 4,196,100	+ ps. 804,110	34	ps. 119,171,831	ps. 109,113,747	+ ps. 10,058,084	"	21	9	20
	Do. ...	...	...	...	...	...	...	...	...	Dfd.	21	5	13½
	Cent. Uruguay ...	970	21.2.48	36,591	+ 64	34	1,142,960	1,248,206	- 105,246	Ord. Stk.	30½	9½	18
	Costa Rica ...	262	Dec., 1947	35,372	+ 6,090	26	197,719	160,025	+ 37,694	Stk.	13	8½	8
	Dorada ...	70	Jan., 1948	23,100	- 7,600	5	23,100	30,700	- 7,600	1 Mt. Deb.	108	100½	106½
	Entre Rios ...	808	21.2.48	ps. 497,100	+ ps. 45,100	34	ps. 15,378,800	ps. 14,678,100	+ ps. 700,700	Ord. Stk.	11	6½	12
	G.W. of Brazil ...	1,030	21.2.48	40,600	- 1,300	8	303,400	303,400	-	Ord. Stk.	102½	19½	31
	Inter. Ctl. Amer. ...	794	Dec., 1947	\$1,123,000	+ \$204,529	52	\$13,076,437	\$10,462,386	+ \$2,614,051	5 p.c. Deb.	88½	65	83½
	La Guaira ...	22½	Jan., 1948	878,078	- 847,198	5	878,078	\$125,276	- \$47,198	Ord. Stk.	22½	3½	17
	Leopoldina ...	1,918	21.2.48	54,630	+ 10,255	8	436,271	484,596	- 48,325	Ord. Stk.	8	4	1
	Mexican ...	483	31.5.47	ps. 1,464,000	+ ps. 459,100	22	ps. 7,706,200	ps. 13,441,600	+ s. 5,735,400	Ord. Stk.	8	4	1
	Midland Uruguay ...	319	Jan., 1948	20,654	+ 7,149	31	126,102	125,785	+ 317	Ord. Sh.	86/3	62½	67½
	Nitrate ...	382	15.2.48	9,753	+ 1,907	6	32,856	25,408	+ 7,448	Pr. Li. Stk.	60½	44½	45½
	N.W. of Uruguay ...	113	Dec., 1947	3,686	- 2,085	26	29,982	34,050	- 4,068	Pr. Li. Pref.	13	7	7
	Paraguay Cent. ...	274	20.2.48	£67,940	+ £3,604	34	£2,181,038	£2,150,691	+ £30,347	Ord. Stk.	189½	129½	166½
	Peru Corp. ...	1,059	Jan., 1948	163,867	+ 15,607	31	1,189,986	1,068,462	+ 121,524	Ord. Sh.	24½	17½	18½
	Salvador ...	100	30.11.47	c156,000	+ c66,000	22	c471,600	c412,000	+ c59,600	Ord. Stk.	4½	1½	1½
	San Paulo ...	153½	...	...	...	...	...	...	...	...	...	...	...
Talca ...	156	Jan., 1948	8,870	+ 6,445	31	49,610	31,835	+ 17,775	Ord. Stk.	189½	129½	166½	
United of Havana ...	1,301	21.2.48	107,384	+ 4,434	34	2,185,319	1,818,889	+ 366,430	Ord. Stk.	4½	1½	1½	
Uruguay Northern ...	73	Jan., 1948	1,216	- 5	31	7,721	9,242	- 1,521	...	...	...	...
Canada	Canadian National ...	23,535	Jan., 1948	8,500,500	+ 286,000	5	8,500,500	8,214,500	+ 286,000	Ord. Stk.	18½	16	18½
	Canadian Pacific ...	17,037	Jan., 1948	6,231,500	+ 391,750	5	6,231,500	5,839,750	+ 391,750	...	...	...	...
Various	Barsi Light ...	202	Jan., 1948	23,610	+ 3,420	44	249,922	225,870	+ 24,052	Ord. Stk.	114½	100½	103½
	Beira ...	204	Dec., 1947	127,025	+ 39,202	13	352,913	269,153	+ 83,760	Pr. Sh.	6½	6	6½
	Egyptian Delta ...	607	20.1.48	20,361	- 880	42	486,660	548,140	- 61,480	B. Deb.	83½	69	81½
	Manila ...	...	...	...	...	...	...	...	...	Inc. Deb.	75	65	74½
	Mid. of W. Australia ...	277	Dec., 1947	27,441	+ 6,727	26	135,500	101,282	+ 34,218	...	...	...	...
	Nigeria ...	1,900	Dec., 1947	415,702	+ 64,840	39	3,366,011	3,440,923	- 74,912	...	...	...	...
	Rhodesia ...	2,445	Sept., 1947	643,980	+ 102,833	52	6,787,603	6,174,664	+ 612,939	...	...	...	...
	South African ...	13,323	31.1.48	1,305,806	+ 31,307	44	55,204,024	50,642,465	+ 4,561,559	...	...	...	...
	Victoria ...	4,774	Aug., 1947	1,177,321	- 11,568	9	...	...	...	...	...	...	...

Receipts are calculated @ 1s. 6d. to the rupee